AD NUMBER

AD493137

NEW LIMITATION CHANGE

TO

Approved for public release, distribution unlimited

FROM

Distribution authorized to U.S. Gov't. agencies and their contractors; Administrative/Operational Use; 10 JUN 1964. Other requests shall be referred to Bureau of Naval Weapons, Washington, DC.

AUTHORITY

USNOL ltr, 26 Nov 1969

NOLTR 64-98

PROCEEDINGS OF THE 7th MILITARY LIBRARIANS' WORKSHOP

"Procurement and Retrieval - Meeting the Challenge"

OCTOBER 2,3,4 1963

NOL

UNITED STATES NAVAL ORDNANCE LABORATORY, WHITE OAK, MARYLAND

NOLTR 64-98

PROCEEDINGS OF THE

SEVENTH MILITARY LIBRARIANS' WORKSHOP

"Procurement and Retrieval - Meeting the Challenge"

ABSTRACT: Papers presented at the Workshop on library operation make up the Proceedings. A panel on the Army STINFO program and one on procurement were important contributions to the Workshop. Two sessions were devoted to library operation - one using computer, the other using automated equipment. Questions and answers at the end of the talks are included.

U. S. NAVAL ORDNANCE LABORATORY
WHITE OAK, MARYLAND

NOLTR 64-98 10 June 1964

PROCEEDINGS OF THE SEVENTH MILITARY LIBRARIANS' WORKSHOP
"Procurement and Retrieval - Meeting the Challenge"

The Naval Ordnance Laboratory was host to the Seventh Military Librarians' Workshop on 2 - 4 October 1963.

These Proceedings are the record of the meeting, including papers presented, and recordings of discussion which followed the talks.

The business meeting of the Group, which was held on 4 October, is included in the Proceedings.

R. E. ODENING

E. H. LANGENBECK
By direction

CONTENTS

CONTENTS (Cont'd)

INTRODUCTION

This report covers papers presented and group discussions at the Seventh Military Librarians' Workshop held at the U. S. Naval Ordnance Laboratory, White Oak, Maryland, on 2 - 4 October 1963.

The purpose of the Military Librarians' Workshops, held annually since 1957, is to provide an opportunity for Department of Defense librarians to engage in organized discussions of library practices and to cooperate in the resolution of administrative and technical problems common to Military libraries.

The theme of the Workshop was Procurement and Retrieval - Meeting the Challenge.

All persons participating in the program were requested to provide copy of their talk for inclusion in the Proceedings. Where papers were submitted, they have been included in the Proceedings.

Where papers were not submitted by the speakers, it was necessary to transcribe the recordings made during the sessions. These recordings required a considerable amount of editing, and I apologize for any errors or discrepancies in transcribing these talks. In the talk given by Lt. Col. Frank Favorite, Armed Forces Pest Control Board, the recording was incomplete, and part of his talk is omitted.

At the end of each talk, the meeting was open for discussion by the group. In many instances, questions were inaudible on the recordings. An attempt has been made to interpolate the questions based upon the speakers' replies.

I would like to thank the Library Staff and other Laboratory personnel for their cooperation and contribution to the success of the Workshop.

Robert L. Nylund and Mrs. June R. Couch of the Library Staff assisted in the preparation of the Proceedings.

Eva Liberman

EVA LIBERMAN
Chief, Library Division

PROGRAM COMMITTEE
FOR THE
SEVENTH MILITARY LIBRARIANS' WORKSHOP

Logan O. Cowgill
Chairman

Eva Liberman
Hostess

Program Committee

Dwight C. Lyman
Chairman

Frances Carey

Harry F. Cook

O. Willard Holloway

Eva Liberman

Robert L. Martin

PROGRAM

Wednesday, 2 October 1963

0900 Welcome to NOL - Capt. F. Costagliola

0930 Subroc Orientation Program (Film)

1030 Tour of NOL Facilities - Mrs. Noel T. Poplis, Tour Director

1400 Army Scientific and Technical Information Program (STINFO)
Peppino Vlannes, Deputy Director, Army Technical Information, Office of Chief of Research and Development.

Panel: Logan O. Cowgill, Frank Wright, Paul Olejar, Fred Croxton

Thursday, 3 October 1963

LIBRARY COMPUTER PROGRAMS

0900 Operations and Services of the Defense Logistics Studies Information Exchange

Mrs. Madeline Startzman, Reference Librarian

0940 U. S. Naval Postgraduate School SABIRS Program Utilizing CDC 1604 and IBM 1401

Professor George R. Luckett, Librarian

1040 An Automated Circulation Program at a Government R&D Installation

I. Haznedari, Chief, Reference and Circulation, Picatinny Arsenal

1120 Description of NWL Library Information Retrieval System in Use for Technical Reports and Computer Program

Marian Craig, Librarian; Jeannette Martin, Mathematician

AUTOMATED LIBRARY PROCESSES

0900 Applying Itek Crossfiler to Preparation of Cross Indexed Catalog Cards

Mrs. Patricia Sievers, Chief Technical Services, Research Library, Air Force Cambridge Research Laboratories

Automated Routines in Technical Services

Paul Fasana, Air Force Cambridge Research Laboratories

0940 Use of Termatrex for Information Retrieval

Lt. Col. Frank G. Favorite, Armed Forces Pest Control Board

1040 Use of Flexowriter in Producing NOL Accession Lists

Charlotte Mullinix, Catalog Branch, NOL Library

1110 Use of Flexowriter in Preparing Catalog and Index Cards

Alice M. Amoss, Librarian, Army Chemical Research and Development Laboratories

1345 Information Retrieval on IBM 1401

Dr. Robert P. Rich, Director of the University/Computing Center, Applied Physics Laboratory, Johns Hopkins University

1500 Mathematics Department - Briefing on NOL Library Computer Program

James J. Crockett, Programmer

1915 (Dinner) Guest Speaker: Walter M. Carlson, Director of Technical Information Department of Defense "The First Year in Perspective"

Friday, 4 October 1963

ACQUISITION OF FOREIGN PUBLICATIONS

0900 Acquisition with Little or no Money

Mary Anglemyer, Military Assistance Institute

Acquisition by Gift or Exchange

Alice D. Ball, United States Book Exchange

1040 Acquisition through Foreign Dealers

Dominick Coppola, Stechert-Hafner, Inc.

Government Procurement Procedures

Milton W. Kelly, Technical Advisor, Directorate of Procurement. Headquarters Air Force Systems Command

1345 Business Meeting

Logan Cowgill, Presiding

Discussion of Continuing Projects	Catherine Hetrick
Summary of Last Year's Workshop	Logan Cowgill
Summing Up and Plans for Next Year's Workshop	Logan Cowgill

1350 Navy Libraries at Work (Film)
Presented by: Elizabeth Burton, Naval Avionics Facility

ATTENDANCE LIST

Alice M. Amoss, Librarian
Chemical Research and Development Laboratories
Edgewood Arsenal, Md.

Mary Anglemyer
Military Assistance Institute
Arlington, Va.

Wilmer H. Baatz
Federal Aviation Agency
Washington, D. C.

Alice D. Ball
U. S. Book Exchange
Washington, D. C.

Charles Bebee
Army Biological Laboratories
Fort Detrick,
Frederick, Md.

Theodore S. Bland, Librarian
Air Proving Ground Center
Eglin Air Force Base, Fla.

Mrs. Mildred H. Brode
Chief Librarian
David Taylor Model Basin
Washington, D. C.

Elizabeth Brown
Naval Air Development Center
Johnsville, Pa.

Robert Brown
Edgewood Arsenal
Edgewood, Md.

Paul J. Burnette, Director
Department of the Army Library
Washington, D. C.

Mrs. Elizabeth Burton, Librarian
Naval Avionics Facility
Indianapolis, Ind.

F. Lucille Cady, Librarian
Bureau of Naval Personnel
Washington, D. C.

John K. Cameron
Air University
Maxwell Air Force Base, Ala.

Mrs. Ruth D. Camp
Bureau of Ships
Washington, D. C.

Madeline F. Canova, Librarian
Air Force Weapons Laboratory
Kirtland Air Force Base, N. Mex.

Mrs. Fayleen C. Carey
Naval Weapons Laboratory
Dahlgren, Va.

Frances L. Carey
Assistant Director of Libraries
Naval War College
Newport, R. I.

Irving G. Carlson
Navy Electronics Laboratory
San Diego, Calif.

Mrs. Mary D. Carmichael, Librarian
Naval Training Device Center
Port Washington, N. Y.

Mrs. Kathleen Carnes, Librarian
Army Materials Research Agency
Watertown Arsenal
Watertown, Mass.

Arthur L. Carrol, Librarian
Army Engineer School
Fort Belvoir, Va.

Mrs. Cleo S. Cason, Chief Librarian
Army Missile Command
Redstone Scientific Information Ctr.
Redstone Arsenal, Ala.

Elizabeth W. Channel
Harry Diamond Laboratories
Washington, D. C.

Augusta A. Clark
Defense Industrial Supply Center
Philadelphia, Pennsylvania

James K. Conway
Army Command and General Staff College
Ft. Leavenworth, Kans.

Harry F. Cook
Chief, Air Force Libraries Branch
USAF Military Personnel Center
Randolph Air Force Base, Texas

John L. Cook, Librarian
Air Force Institute of Technology
Wright-Patterson Air Force Base, Ohio

Dominick Coppola
Stechert-Hafner, Inc.,
31 E. 10th St.
New York, N. Y.

Michael A. Costello
Chief, Technical Information Section
Picatinny Arsenal
Dover, N. J.

Logan O. Cowgill, Chief Librarian
Office of the Chief of Engineers
Department of the Army
Washington, D. C.

Marian Craig, Librarian
Naval Weapons Laboratory
Dahlgren, Va.

Mrs. Ruby Craven
David Taylor Model Basin
Aerodynamics Laboratory
Washington, D. C.

Fred Croxton
Redstone Scientific Information Center
Redstone Arsenal, Ala.

Mrs. Sara S. Dearman
Army Missile Command
Redstone Scientific Information Center
Redstone Arsenal, Ala.

Robert L. Deignan
Army Security Agency Training Center and School
Fort Devens, Mass.

Dorothy F. Deininger
Head, Library Services Branch
Bureau of Naval Personnel
Washington, D. C.

Mrs. Patricia F. Del Mar
Boston Naval Shipyard
Boston, Mass.

Charles DeVore, Deputy Executive Asst. for Scientific Information
Office of Naval Research
Washington, D. C.

Mrs. Helen DeVore
Naval Oceanographic Office
Washington, D. C.

Ernest DeWald
Defense Intelligence Agency
Washington, D. C.

Jean E. Dickinson
Air Force Flight Test Center
Edwards Air Force Base, Calif.

A. T. Drury
Head, Technical Information Center
David Taylor Model Basin
Washington, D. C.

Richard Evans
Applied Physics Laboratory
Johns Hopkins University
Silver Spring, Maryland

Paul J. Fasana
Air Force Cambridge Research Laboratory
Bedford, Mass.

Lt. Col. Frank G. Favorite
Armed Forces Pest Control Board
Walter Reed Medical Center
Washington, D. C.

Oliver T. Field
Air University
Maxwell Air Force Base, Ala.

Agnes L. Frey
Army War College
Carlisle Barracks, Pa.

Lola W. Getman, Librarian
Rome Air Development Center
Griffiss Air Force Base, N. Y.

Mrs. Caroline S. Ghebelian
Naval Explosive Ordnance Disposal Technical Center
Indian Head, Md.

Mrs. Peggy Glover
Defense Industrial Supply Center
Philadelphia, Pa.

M. Charleen Gordon
Army Logistics Management Center
Fort Lee, Va.

Mrs. Lucy Greene
Army Quartermaster Training School
Fort Lee, Va.

Walter B. Greenwood
Coordinator of Naval Libraries
Dept. of the Navy
Washington, D. C.

Willard Hawk, Librarian
Naval Air Turbine Test Station
Trenton, N. J.

Ishmail Haznedari
Picatinny Arsenal
Dover, N. J.

J. Heston Heald
Defense Documentation Center for Scientific and Technical Information
Alexandria, Va.

Lt. Ralph P. Heckman, EDP Officer
Air Force Systems Command
Foreign Technology Div.
Wright-Patterson Air Force Base
Ohio

Ruth Frances Heisey
David Taylor Model Basin
Washington, D. C.

Mrs. Catherine R. Hetrick, Librarian
Air Force Office of Aerospace Research
Washington, D. C.

O. Willard Holloway
Defense Supply Agency
Alexandria, Va.

Mrs. Alice D. Hopkins
Naval Weapons Laboratory
Dahlgren, Va.

Elizabeth B. Howard
Technical Information Division
Oak Ridge National Laboratory
Oak Ridge, Tenn.

T/Sgt. Edgar Hund
Air Force Systems Command
Foreign Technology Division
Wright-Patterson Air Force Base,
Ohio

Francis H. Hunt, Assistant
Technical Director for
Administration
Navy Underwater Sound Laboratory
New London, Conn.

Fern L. Hunter
Army Combat Developments Command
Ordnance Agency
Aberdeen Proving Ground, Md.

Mrs. Ruth Irons
Army Transportation School
Fort Eustis, Va.

Thorkel H. Jensen, Librarian
Naval Ordnance Test Station
Pasadena, Calif.

Elizabeth F. Jesse
Armed Forces Staff College
Norfolk, Va.

Mrs. Esther M. Johnson, Librarian
Photo Interpretation Center
Ft. Holabird
Baltimore, Md.

Noel W. Johnson
Air University
Maxwell Air Force Base, Ala.

Milton W. Kelly
Asst. Director of Procurement
Air Force Systems Command
Washington, D. C.

Eugene Kennedy
Federal Aviation Agency
Washington, D. C.

Fenton Kennedy
Johns Hopkins University
Applied Physics Laboratory
Silver Spring, Md.

Charles R. Knapp, Librarian
Industrial College of the Armed
Forces
Washington, D. C.

Mrs. Jessie W. Kohl
Naval Medical Research Laboratory
Naval Submarine Base
New London, Conn.

Mrs. Carolyn J. Kruse, Librarian
Naval Ordnance Test Station
China Lake, Calif.

Michael Kubisiak
Goddard Space Flight Center
Greenbelt, Maryland

Mrs. Jo Ann E. Lappin
David Taylor Model Basin
Aerodynamics Laboratory
Washington, D. C.

Prof. George R. Luckett
Director of Library
Naval Postgraduate School
Monterey, Calif.

Dwight C. Lyman, Librarian
Navy Underwater Sound Laboratory
New London, Conn.

Mrs. Cathryn Lyon
Naval Weapons Laboratory
Dahlgren, Va.

Mrs. Evelyn McCarthy
Army Information School
Fort Slocum, N. Y.

Raymond McNamara
Army Map Service
Washington, D. C.

Virginia A. Marsh
Naval Weapons Laboratory
Dahlgren, Va.

Mrs. Anne S. Marshall
Navy Mine Defense Laboratory
Panama City, Fla.

Dorothy Jeanette Martin
Naval Weapons Laboratory
Dahlgren, Va.

Robert L. Martin, Librarian
Army Natick Laboratories
Natick, Mass.

Mrs. Mildred C. Moreland
Naval Medical Research Institute
Bethesda, Md.

LaVera Morgan
Naval Research Laboratory
Washington, D. C.

Mrs. Lettie Multhauf, Librarian
Naval Observatory
Washington, D. C.

Mrs. Mildred B. Nester
Army Signal Center and School
Fort Monmouth, N. J.

Frank T. Nicoletti, Librarian
Army Map Service
Washington, D. C.

Paul Olejar
Edgewood Arsenal
Edgewood, Maryland

John B. O'Farrell, Deputy Technical Information Officer
Naval Missile Center
Point Mugu, Calif.

Mrs. Henrietta Page, Librarian
Naval Underwater Ordnance Station
Newport, R. I.

John J. Parise, Administrative Officer
Dept. of the Army Library
Washington, D. C.

Virginia L. Parker, Librarian
Naval Ordnance Laboratory
Corona, Calif.

Henry E. Patrick
Air University
Maxwell Air Force Base, Ala.

Ruth H. Phillips
Defense Supply Agency
Alexandria, Va.

Katherine H. Piper
Army Electronic Proving Ground
Fort Huachuca, Ariz.

William H. Plant, Librarian
Bureau of Naval Weapons
Washington, D. C.

Thelma B. Player, Librarian
Special Projects Office
Dept. of the Navy
Washington, D. C.

Ruby G. Porter, Librarian
Air Force Office of Research Analyses
Holloman Air Force Base, N. Mex.

Ernest W. Powers
Frederick Research Corp.
(Wheaton) Silver Spring, Md.

Mrs. Sharlene G. Rafter
David Taylor Model Basin
Washington, D. C.

Pauline C. Ramsey
Office of Technical Services
Washington, D. C.

Dr. Robert P. Rich
Johns Hopkins University
Applied Physics Laboratory
Silver Spring, Md.

Mrs. Marguerite G. Ritchie,
Librarian
Air Force Systems Command
Washington, D. C.

Mrs. Thelma Robinson, Librarian
Naval Medical Research Institute
Bethesda, Md.

Murray Rogofsky, Librarian
New York Naval Applied Science
Laboratory
Brooklyn, N.Y.

John E. Rosenberg
Harry Diamond Laboratories
Washington, D. C.

Eunice V. Salisbury, Librarian
Army Cold Regions Research and
Engineering Laboratory
Hanover, N. H.

Chester G. Salmon, Librarian
Watervliet Arsenal
Watervliet, N.Y.

Paul Shank
Aeronautical Chart and Information
Center
St. Louis, Mo.

Mrs. Patricia T. Sievers
Aerospace Research
Cambridge Research Laboratory
Bedford, Mass.

Alan G. Skelton, Librarian
Army Waterways Experiment Station
Vicksburg, Miss.

Clarence T. Smith
Dept. of the Army
Office of Research and Development
Washington, D. C.

George J. Stansfield, Librarian
National War College
Washington, D. C.

Mrs. Madeline Startzman
Defense Logistics Studies
Information Exchange
Fort Lee, Va.

Charles H. Stewart, Chief Librarian
Dept. of National Defence Library
National Defence Headquarters
Ottawa, Ontario, Canada

Evelyn Stone
Bureau of Naval Weapons
Washington, D. C.

Josephine E. Sullivan
Dept. of the Army Library
Washington, D. C.

Dr. Vernon D. Tate, Librarian
U. S. Naval Academy
Annapolis, Md.

Mariana J. Thurber
Dept. of the Army
Adjutant General Office
Special Services Div.
Washington, D. C.

Howard B. Turner
Office of the Chief of Engineers
Dept. of the Army
Washington, D. C.

Mrs. Anne M. Tzarnas
David Taylor Model Basin
Washington, D. C.

Peppino Vlannes
Dept. of the Army
Office of Research and Development
Washington, D. C.

James A. Walters, Librarian
Bureau of Yards and Docks
Washington, D. C.

John M. Weaver, Librarian
Goddard Space Flight Agency
National Aeronautics and Space
Administration
Greenbelt, Md.

Martin Weik
Aberdeen Proving
Aberdeen, Maryland

Egon Weiss, Librarian
U. S. Military Academy
West Point, N. Y.

Mrs. Helen M Wiener
Dept. of the Army Library
Washington, D. C.

Lorraine M. Wingerter
Army Military Police School
Fort Gordon, Georgia

Mrs. Patricia Wittgruber
Aerospace Research Laboratory
Wright-Patterson Air Force Base, Ohio

Lawrence Wolcott
Navy Oceanographic Office
Washington, D. C.

Frank Wright
Dept. of the Army
Office of Research and Development
Washington, D. C.

Mrs. Jeanette Yates
Naval Weapons Station
Yorktown, Va.

NOL LIBRARY STAFF

DIVISION OFFICE

Eva Liberman, Librarian
Mrs. June R. Couch, Secretary

CATALOG BRANCH

Mrs. Laura A. Knott, Chief
Mrs. Sylvia M. Casey
Mrs. Sylvia G. Cooper
Mrs. Helen C. Daly
Mrs. Elizabeth B. DeLeon
Mrs. Wilidine E. Franklin
Mrs. Jean M. Gold
Sandra J. Haus
Miriam E. Hawk
Leo A. Knights
Mrs. Eva A. Kronberg
Mrs. Kathleen M. Leslie
Mrs. Frances C. MacIsaac
Mrs. Charlotte A. Mullinix

REFERENCE ACQUISITION BRANCH

Mrs. Mary C. Ward, Chief

Circulation
Mrs. Doris D. Harker
Mrs. Helen E. Conoley
Carol A. Einwich
Kathleen L. Brown
William Howard

Distribution
Mrs. Gertrude Loeffler

Microfilm
Mrs. Elizabeth H. Tucker
Mrs. Marcella R. Arlotta
John Bowlin
Annell Brown
Mrs. Anna F. Miller
Mrs. Lila F. Rosloff

Order Branch
Robert L. Nylund

OPENING COMMENTS

MISS LIBERMAN: Ladies and Gentlemen. I would like to welcome you to the Naval Ordnance Laboratory on behalf of the Library staff. While we are waiting for the Captain to join us, I have a few announcements I would like to make.... (Announcements).

I see that Capt. Costagliola has joined us. I have a few things I would like to tell you about him.

Capt. Costagliola joined the Naval Ordnance Laboratory in July, 1963, as Assistant Technical Director for Administration and Logistic Support. He was brought up in Providence, Rhode Island, and graduated from the Naval Academy in 1941. He has had postgraduate training in Ordnance Engineering at the Naval Postgraduate School, and in Nuclear Physics at the Massachusetts Institute of Technology. He saw service in World War II and in the Korean War. He has had a considerable amount of sea duty during his naval career. In 1952, he served as Chief of Weapons R&D Section, Atomic Energy Division, Office of the Chief of Naval Operations. He has also served on the Atomic Energy Commission as Deputy Chief of the Missile Projects Branch and the Military Liaison Committee, and he was Military Assistant to the Assistant Secretary of Defense, Atomic Energy. Immediately preceding his assignment to NOL, he was Commanding Officer of the Ammunition Ship, FIREDRAKE, in the Pacific Fleet.

It is with great pleasure that I introduce Capt. Costagliola, who will welcome you to the Naval Ordnance Laboratory.

WELCOME

by

Capt. F. Costagliola

CAPT. COSTAGLIOLA: On behalf of Capt. Odening, Commander of the Naval Ordnance Laboratory, who was not able to be here, it is my pleasure to welcome you to the Naval Ordnance Laboratory.

Here at the Naval Ordnance Laboratory, our Library performs a key function in support of the Laboratory's mission. The Laboratory's mission is to conduct research, design, development, test and technical evaluation of complete ordnance systems of components, of assemblies, and of materials which pertain to existing ordnance systems, advanced ordnance systems, and proposed ordnance systems, particularly in the fields of missiles and underwater ordnance. Our mission is also to conduct research in the ordnance sciences.

Our Library, under Miss Liberman, is responsible for initiating, planning, developing, and controlling a complete technical Library program for the Laboratory. This includes processing books and documents of all (security) classifications received in the Library and analyzing the materials, maintaining a documents collection, and recording all changes and corrections in security classification. The Library issues a monthly accession list on all newly acquired periodicals and books, and weekly accession lists for secret, confidential, unclassified, and restricted data reports. The Library is also responsible for circulation of documents and for providing reference service on all classified and unclassified technical documents. It is responsible for purchase, circulation, and reference service on books and periodicals. It develops and maintains a routing program of current periodicals.

There are some 3,000 people that work here at the Laboratory. Of these, 1100 are scientific personnel whose interest and whose responsibilities in support of the Laboratory's tasks cover a tremendous range of human knowledge and are involved in such diverse subjects as Oceanography, Aerodynamics, explosion effects, lasers, mathematics, high energy compounds, magnetic devices, detonation physics, nuclear physics, Antarctic research, and a host of others.

In all these fields, there is a continual evolution, and there is rapid progress being made; basically, our Library must have on tap the existing knowledge in all these fields and must process the incoming new knowledge so that those people who require it know that it is here and can get it when they need it and when they want it.

Our Library also is responsible for distributing the new knowledge that is developed here in the Laboratory. They do this in the form of reports and distribute them to those activities that need the information or that can use the information. This is an operation of large magnitude. In the Library, we have some 37,000 books and periodicals and 175,000 reports. Each year we add some 1,200 books and periodicals, and some 10,000 technical reports. Our technical periodical subscriptions number some 500 titles. The annual distribution of NOL publications, that is, reports on our research work here, number some 37,000 copies.

What I am trying to emphasize here is that our existence and our purpose require a large magnitude of incoming information and outgoing information, and our Library is a key unit in this operation. It is because of the importance of our Library in this operation that we are particularly sympathetic

to the aims of the Military Librarians' Workshop and in particular, to the theme of this year's Workshop - Procurement and Retrieval - Meeting the Challenge. We are most happy to host this Seventh Military Librarians' Workshop, and we wish you a fruitful meeting. We hope you enjoy your stay with us. Thank you.

MISS LIBERMAN: There will be two movies this morning before our coffee break. After our coffee break, if you will all return to the auditorium, there will be a short talk on the HASP Projectile, followed by a tour to various areas in the Laboratory.

Mrs. Poplis, who will be your tour guide, will give you whatever instruction and information you need before you leave for the tour. However, before that, Mr. Ace Parker is going to talk to you about the Laboratory's HASP Program and the work that he is doing. Mrs. Poplis will take over now.

MRS. POPLIS: Thank you, Miss Liberman. You have already been welcomed here on the part of the Laboratory, so I don't need to do this again, but I am glad to see so many of you here.

Some of the work we accomplish here, we are not able to tour and see the work in these areas, but because we are proud of this work, we want you to know about it. While we don't have time to tell you about all the wonderful things we think we do, we have picked one as representative of our work. This is our high altitude sounding projectile for which you have already received a pamphlet. I would like to introduce Mr. Parker from our Air and Surface Electrical Engineering Department to describe this to you. We call this Project HASP.

NOL PROJECT MANAGEMENT

MR. PARKER: Thank you, very much. In discussing HASP with you this morning, I want to emphasize three of the major elements of our major development program rather than go into any of the technical aspects which I think you will find at least described in brief in the pamphlet.

I am going to touch on three of the main areas that go into the life cycle of a project here at NOL. The first of these is the why of the situation, namely, why do we want a particular ordnance item, a system, a component. Also, who is it that describes that we want this, how does this requirement come into being. Sometimes these are obvious and sometimes they are not. The second, which then follows the first, is the actual development itself once the requirement has been established, how does a project actually end up with the desired items, hardware, or systems. In particular, I want to discuss briefly the NOL organization, the project manager type, in which

we operate for the major ordnance projects which is, I think a little different than other organizations, but in our case I think we found it to be quite effective. The third part of this is, of course, the end item itself, namely, what does it look like, does it meet the original requirements, is it low cost, is it highly operable, is it safe, does it meet what we set out to design initially. The first and third of these elements are described to a certain degree in a rather short movie that we have which is, incidentally, one of a series of NOL film reports that we issue.

We put three or four of our major accomplishments together about every six months to a year, depending on the accomplishments, I might say, and these then are available and, of course, are used primarily by our Navy family in a sense to tell our bosses at the Bureau of Naval Weapons, at the Chief of Naval Operations, and at other Laboratories what NOL is accomplishing. We found these film reports to be very effective. This HASP film was from the third, runs about eight minutes, and is unclassified, of course.

The film which I would like to show now will cover again the first and third items, and then after the film I would like to discuss the second element I mentioned, namely the organizational structure here to accomplish the actual end item of a project. (Movie)

For those of you in the area, you may have recognized Johnny Batchelder's voice, the narrator. He is one of our neighbors here, and helps us out a great deal. The way this particular project came into being, which is the case in many projects, was because of an actual need. This goes back to about 1956 when some of the first atomic nuclear tests at higher altitudes than had been actually used before were proposed, and it was realized that there was no means of determining the winds at these altitudes - 100,000 - 200,000 feet - to be absolutely sure that the fallout would go in the desired direction. So, on a crash basis at that time, the Office of Naval Research was given the job of coming up with anything that would do the job of getting this important information. They, in looking around, and because of some experience they had in some other projects, were aware of the Army Loki Antiaircraft Rocket Program. Incidentally, I might mention that the Army, Air Force and the Navy are using this type of vehicle. We call it HASP. The Army calls it Loki, as does the Air Force.

ONR realized that in the time scale they had, this was about the only approach, so they changed the explosive payload which was used in the antiaircraft application, and had components available, the motors and the darts, and they came up with a reasonably successful item which did the job for them.

It then became apparent that this meteorological rocket should be developed in an orderly manner. The operability had to be improved, as did the handling procedures and the safety, the cost reduced, and as was mentioned in the film, it was very desirable to be able to launch this through a five-inch gun and not to use the tube-type launcher which you may remember from the film. They had to strap it on in a piggy back fashion to the guns aboard ship.

The Bureau of Naval Weapons assigned NOL the task of making this a completely developed and released item which could be used on a regular basis and would have all the advantages that I had mentioned as requirements. Then, once this arrived at NOL as a task, we had three major phases. The first one is what we call the feasibility phase, and this is handled by a Feasibility Committee appointed by our Technical Director, Dr. Hartmann. Depending upon the type of a task that we have, we have different skills, of course, that are employed, but on that Committee, the Project Manager is one of the members, and he is picked for a general well-rounded experience, ability, kind of a jack-of-all-trades and, I'm afraid, a master of none; but this is what is required. Then we, of course, have on the Committee the experts. For example, in HASP, we had somebody from the Aeroballistics Department because one of the major concerns is the aerodynamic heating: the temperature, for example, of that head gets up to about 1200 degrees Fahrenheit which means that the mechanical fuze which we used to eject the pay load has to be designed with components that will withstand these high temperatures.

We also have mechanical engineers and electronic engineers. These are senior people either Division Heads or in some cases they were Department Heads.

From the standpoint of the instrumented round, we have a physicist because of the upper atmosphere physics, having to look into the actual parameters of the atmosphere, how they will range in value, what type of measurement approach ought to be taken from the physics standpoint to measure the information of the upper atmosphere.

We have a systems man who is concerned with the reliability, the safety, the trade-off of one approach to another, what you gain if you used a certain type of a safety device as against another from a safety standpoint, or from the operability standpoint. Using one type of battery against another and so on.

The Committee actually does what the terms state, they determine the feasible approach to solving the problem of obtaining upper atmosphere information, and this can take the form of actually building up, in the Laboratory, some of the breadboards, if you will, of the circuits or of the mechanical components. Of course, it is primarily a paper study. These might be technical equations involving the physics of the upper atmosphere, but it certainly takes into account every expected problem and solution to this requirement. It might even include a few field tests of some of the more important and unknown items. It may take anywhere from three months to a year, depending again upon the difficulties and, of course, the overall time scale given us. The output of this committee then is a report which describes the feasible approach and goes as far as they were able to go in outlining to the second committee, which is a system design committee, how the second committee should actually design the equipment.

Now we have a change in Committee structure. We'll have a carry over of the Project Manager, and probably one or two of the original Committee, the Feasibility Committee, to the Design Committee. Now we get into the working level, the technical abilities where we will now have a man who is the lead man, let's say, from the Mechanical Engineering Department. He is a senior Mechanical Engineer and he represents his Division on the System Design Committee and this is then the case for the Electrical or Aeroballistic, Physics and Materials Division and Division that has a major input to the design.

Now the Project Manager acts as the Chairman of this Committee. He did not act as a Chairman of the first committee, that is headed up by probably a Department Head or it may even be one of our Associate Technical Directors. But he is the Chairman of the second committee and acts to coordinate all the effort, both inside the Laboratory and outside, and by outside I mean the contacts with the Bureau of Naval Weapons and with any other organization that either has inputs or is interested in this particular system. He is responsible for seeing to it that the funding is adequately arranged, and that the various divisions and people working on this project don't overspend and sometimes don't underspend.

The technical work, the actual design is done in the divisions. We have a functional type of organization at NOL, in which we have as the term functional implies, skills in separate divisions. Mainly we have an Electrical Division which is in the Electrical Engineering Department. Within the Electrical Engineering Department, we will have another type of Electrical Division, which specializes in fuzing; and we will have another division which specializes in fire control and guidance and these are people and equipment which work on many projects so that we can get the most out of our men and out of our equipment without having to separate these throughout the Laboratory in duplicating effort.

Each man on the System Design Committee is responsible for the design effort, technical effort, the actual design of circuits, the building up of mechanical parts in his particular area which is usually a division. There may be two or three engineers, or for some of our big projects we have a full division, 20 to 30 people that are working on a single project. The function of the Systems Design Committee is to integrate the work of all of the divisions. The Project Manager is responsible for this in particular. It's his responsibility to see to it that people know what the problems are, and for interface problems, that the mechanical engineers know that an electrical device is going to go on their mechanical part, and that they in turn work with the Electrical Division. This is one of the major responsibilities of the Project Manager.

The output of the Systems Design Committee, and the total effort, is actual equipments. In other words, these equipments, in the case of HASP, were the fuze and the body with the pay load, (chaff or instrument package) designed here, and built in some instances here in its entirety. As you may know, we have a very complete machine shop and all the other facilities we need to actually fabricate equipments. In some instances,

we will subcontract out some of the pieces which may need special skills. We put these together here and we environmentally test them.

I should mention, of course, that on the Systems Design Committee we have a representative from the Evaluation Department, the evaluators as the term implies. They are the ones that eventually are going to determine for the Laboratory if this thing really does what it should. In other words, we don't trust a development engineer to evaluate his own material. This is like asking a parent to grade his own child. So we have separate evaluation; actually a department, which evaluates on paper, in the field from the standpoint of field firing HASP, and in between in our environmental facilities, which I think you are going to see. I see she (Mrs. Poplis) is shaking her head, so I might just point out that we have the required high temperature, low temperature, and vibration equipment just to mention a few. I'm sure you are all familiar with what the environments are in particular in a rocket, with all the publicity. These we have here and we shake, rattle and roll, as the boys say, to see that the equipments are going to work.

The output of the Systems Design Committee is an actual report that has been a result of complete testing, the paper work, evaluation, field tests, and ends up by saying to the Bureau, hopefully, we are now ready to build these in what we call the prototype production quantity.

Here we then build, let's say a 100, with a contractor who uses our drawing and specifications that have been a major part of our effort to see whether or not what he builds will work the way we found it to work, and can he build it according to our drawings. There are always some mistakes. We always make mistakes. We have to change drawings, so eventually we end up with drawings and specifications that do reflect a workable device.

Now the Evaluation Department takes over and evaluates these items and this now ends up in a release production. This means that the items we made in prototype production not only can be made but operate as they were expected to operate. This then is essentially the major part of the NOL effort which results in a letter to the Bureau which states "Yes, this thing now does what you ask us to make it do".

From then on the third phase, which is important but requires less NOL effort, is what we call production assistance. We assist the Bureau, who for years to come, is going to buy HASP using our documentation, and they'll run into trouble with contractors. They'll have questions. So we have people here that are skilled, that are experienced, and can answer the questions, and can go to contractors, can help the Bureau during the production problems. I think that covers the half hour allotted for my talk.

If there are any questions, I would be glad to answer them. Again, I think you have a little blue folder on HASP which will give you some of the additional information.

MRS. POPLIS: No, we will not be going to the Environmental Laboratories, but we do have for one of the sections the wind tunnel and ballistics ranges; these are, in a sense, test facilities.

At the completion of the tour you will be brought back to the cafeteria lounge where members of our library staff will meet you to accompany you to lunch.

ARMY SCIENTIFIC AND TECHNICAL INFORMATION PROGRAM (STINFO)

Peppino Vlannes
Deputy Director, Army Technical Information

Panel: Logan O. Cowgill
Frank Wright
Paul Olejar
Fred Croxton

MR. COWGILL: Gentlemen. It is a great pleasure to be here this afternoon. I did not have a chance to talk to as many of you this morning as I would have liked to. I assure you that I couldn't get around to meeting some of you. Perhaps if I looked in your direction and you thought I was coming but I turned off someplace else, it was entirely unintentional.

We have a great privilege and honor this afternoon to have represented here a new program which has begun in the Department of the Army and at the Department of Defense level. This is the technical information program or, as it is known in the Department of the Army, the Scientific and Technical Information Program (STINFO).

We also have the honor of having the Deputy Director of the Department of the Army information program here with us on the program this afternoon. He is Deputy DATI, and we are all in love with acronyms these days. The Office of the Director of the Department of the Army Technical Information is obviously known as DATI because he is DATI, and also our "Sugar DATI", we hope. The Deputy Director of Army Technical Information is Mr. Peppino Vlannes, and I am sure it would be more than cliche to say, as his boss has said, that Peppino stands for "Peppy."

MR. VLANNES: It is indeed a pleasure to come back to the Navy after an absence of several years. The very kind words of Mr. Cowgill prompts me to begin by telling you that on behalf of General Dick, the Chief of Research and Development, Department of the Army, we are pleased to be here.

Col. Aines said that he is sorry he could not be here, Col. Aines being DATI, but I have been designated to stand in his shoes. I don't know which

one has the biggest pair, but I am very happy to be back in Navy company again. You see, I spent six years at the Naval Research Laboratory. If Mrs. Hooker is present, I am sure she will remember that I pestered her many a day.

What we would like to tell you about this afternoon is the Department of the Army Scientific and Technical Information Program, give you a little bit about the background of it, how it got started, and how far back Scientific and Technical Information retrieval problems really went. It goes back quite aways into antiquity, as you will hear from Mr. Wright.

We are going to make a team presentation. Mr. Wright will be our first speaker. Mr. Wright is the Special Projects Officer in the third leg of the stool of the Office of DAST I. Mr. Wright came to us in STINFO almost a year ago. He really was drafted into the STINFO Program and he became a Stinfo-ologist.

MR. WRIGHT: It will be my pleasure this afternoon to take you back along the track that we have traveled and show you the scenes that reflect some of the history and events leading up to the present explosion in Scientific and Technical Information activities.

Information retrieval is not exactly a new idea. The Eighteenth Century Chinese had a handy piece of automated equipment, and Colonel Billings, in 1880, suggested that the Army make use of an automated machine to make decisions for them. Since that time, the Army has continually recognized the need for a Scientific and Technical Information Program.

The extraordinary expansion of literature, reporting new knowledge in science and technology, the impact of a growing Army research and Development Program, the concern for increased costs of research and development, and other factors have resulted in early studies and efforts aimed at improving the Army posture.

This explosion has assumed such proportions that the library accessions up to 1950 totaled 75,000. That is the total from 1920 to 1950. However, in the next ten years, from 1950 to 1960, this amount doubled. In other words, there has been 75,000 accessions in a ten-year period, which is equal to the amount in previous history.

Consolidation of financial reports indicated that the R & D Program was now totaling over $16 billion, with industry bearing about 25% of this amount, the Army bearing 14%. You can see, indeed, that this is a tremendous amount of money involved.

A survey of approximately ninety Army installations and activities was made in 1962 to ascertain the nature and extent of the number of personnel involved and the funds committed. Because of the difference in local operating procedures and the shortness of time in which to conduct this survey, and because of variance of interpretation of the terms of reference it is not possible to state the exact dollar figures to show the extent of

Scientific and Technical Information activity. An approximation would show that $23 million is being spent annually by the Army in the Scientific and Technical Information effort. A contract survey is being conducted now to ascertain the correct information.

As a result of all this sudden realization of the monies and factors involved, the requirement was levied on the Army by the Deputy Secretary of Defense to take action in four areas: policy, organization, programming, and administration. Col. Andrew Aines was appointed Director of Army Technical Information, commonly called DATI, but often times lovingly called "Daddy", with a mandate that he develop and recommend policy, provide coordination and review, organize and maintain the Office of Director of Scientific and Technical Information, and establish the activities required.

As a result of these actions, an acceleration of the studies of a previously appointed Ad Hoc Group for Scientific and Technical Information took place. The Ad Hoc Group was convened last October in Washington. Twenty-three tasks, or problems, were given to 100 men and women in this group. The twenty-three tasks were divided among seven subgroups, the leaders of which were instructed to provide the answers prior to the beginning of December. They met the schedule on this date on the nose and, based on their 105 recommendations and guidance received from the Office of the Director of Defense R&E, the Army program was ready for approval by the end of the year. This will show you the milestones in the efforts up to the point where the Army program was approved early in 1963.

The purpose of the Army program is to achieve a centrally coordinated, de-centrally operated Army Scientific and Technical Information Program. The objectives of the program are: first, to improve the Army Scientific and Technical Information efforts so that it will be more responsive to the needs of Army scientists, engineers, project officers, and managers; second, to affect economy by the reduction of lead-time in weapons systems, research and development through provision of timely relevant information which can be accepted with confidence as a basis for making sound decisions; third, to minimize the duplication of effort among scientists; fourth, to ultimately provide a reasonably rapid scientific and technical response time; fifth, to establish an information flow, not only within the Army, but in consonance with all DOD elements, other Government agencies, industry, educational institutions, and activities of scientific and professional societies; sixth, to tap foreign sources of information to provide more nearly complete scientific and technical information coverage for the Army needs; and seventh, to provide a direct channel of scientific and technical information with free exchange of information within the limits of security restriction and the need-to-know.

Initial efforts in accomplishing these objectives will be oriented to identification of STINFO activities currently in being, the establishment of an Office of Army Technical Information, and the undertaking of selected efforts in research and exploratory developments designed to determine and develop specific methods and equipment for the improvement of information retrieval and distribution.

Recommendations to change current methods of providing resources - which by that, I mean funds and personnel - will be made after careful analysis of the requirements during initial effort.

In conclusion, I would state that the Army program is on the track. Resources have been provided in the form of dollar and personnel authorization; the crew is being recruited; and the various objectives are well on their way to accomplishment. Once the program is proceeding at full speed, you will hear more of it, I am sure.

Mr. Vlannes will go into further details on the program.

MR. VLANNES: There are a couple of things I would like to start with. I have to show my pictures, too, you know.

The Scientific and Technical Information Program is supposedly for scientists and engineers. The caption on this says:

> From the cyclotron of Berkeley
> Through the Labs of M. I. T.
> We're the lads that you can trust
> To keep our country strong and free.

Unfortunately, the remainder of the refrain that these folks are singing is not always from the same book, verse, and chapter.

I know we have been accused of having a library that looks something like the following, and there are some recommended solutions which I will show you, but I will only give you a glimpse of one. This is supposed to be the chaotic state of scientific and technical information. There is another one of these that shows a repository. What it really shows is a big truck backing up to a refuse barrel and the guy is standing there in amazement wondering what to do. To counterbalance what I have just shown you, here is a recommended solution.

It looks all very nice and neat and tidy, but I am not quite sure if that is the only thing that is going to be needed in this new picture. To begin with, what are we talking about when we talk about Scientific and Technical Information? It has a strange face for us. It has many interfaces. It covers everything from combat developments, right on around our circle, all the way back to public information, the military requirements, and logistics. It is defined as the knowledge that is required to conduct the Scientific and Technical Information Programs of the Department of Defense from concept, all the way through the point of design and release to production.

This point of design and release to production is a hard thing to put a finger on, because exactly where does this occur? Allegedly, it occurs at the point of standardization, but this isn't always necessarily true, because we, in the Army, have a few APs that get into the act. These are known as Associate Project Officers. There is a point of phase-over from RDT&E into Logistics (Procurement and Production) at which the AP becomes the

Project Officer and the Project Officer becomes the AP. This is not always a precisely defined point, either in sequence or in time.

The Department of Defense has put out a series of definitions. Those of you who have had the joy of looking at these directives will begin to recognize the familiar.

The first thing the Department of Defense defined was "primary production and distribution." It actually began at the time the man finished his work, be what that work might consist of, and had a service rendered to him. Usually, this was at a Technical Editor's desk. It included all the production cycle or reports, graphic arts, still photography, and motion pictures. It went through the printing cycle and through the point of initial distribution, the prime distribution included.

In setting up these definitions, there was a pattern that was going to evolve which would begin to define some of the other functions and activities.

The next thing they defined was a Documentation Center. This is a point of secondary distribution of documents. It is a point on the distribution list of a primary distribution. In addition to the local operations where there are local documentation centers (and we have quite a few in the Army), the Department of Defense set up one documentation center which would be the secondary document distribution point on a DOD-wide basis.

This began a series of other definitions, and this was followed by a series of instructions that created the Defense Documentation Center. You will begin to see, as I go along, that in re-orienting the Defense Documentation Center, there was another pattern beginning to evolve, and that was one which was concerned with Technical Information Centers. Traditionally, in the Army, this has been a composite of several kinds of activities. The primary production and distribution, the technical library, the Documentation Center activities - these can be there, but that Evaluation Center operation, the little fellow in the middle, must be there in order to have a technical center.

They defined Evaluation Centers for us and said that these were the kinds of things that an Evaluation Center would do. They would have a condensing function, and the kinds of products they would put out would be state-of-the-art summaries, technical studies, and monograms.

You can now begin to see some of the things that the old ASTIA operation had included were now being diverted back to the three Services where the scientific competence was in residence. You can begin to appreciate now that the Technical Information Centers should be an integral part of the local RDT&E operation because the technical backup required to operate such a Center is at the local level.

This is a little bit at variance with the VINITI operation of the Russians, and some of the philosophies are being expounded in the Congress today to set up a Center in the Country which would be all things to all people.

The Department of Defense defined journals for us. It was real nice of them. They defined a technical journal as being one, and as our charts show it, must have some kind of scientific or technical content. It must have a regular issue, whether this be monthly, semi-annually, annually, etc. It must disseminate knowledge, and it must have specialized applications. Everything else, other than that, fell into the secondary journal category. It includes the kinds of things that are listed, such as your bibliographies, your abstracts, and your specific area of interest papers which are normally pulled together through a journal operation.

Because there was a human element in the interchange of information, a face-to-face operation, the Department of Defense said it would include scientific meetings and symposia. To this extent, each Service is required to set up a focal point at their Staff level, such as we have at Army Staff, which will be a clearing house for these kinds of meetings. The three Services should not duplicate the kinds of meetings that can be held by one Service. If the Army has such a show going, the Air Force should not duplicate. It should join the Army, participate in its program.

All research and development efforts went into this that were oriented toward handling of scientific and technical information. This included such things as: how do people communicate with each other, the handling of it, the automated scanning, the transmission devices - there is a whole host in here.

The Department of Defense defines something else. These things are not new to you. I am just using them as a lead-in to an operation in the Army. They defined what data information and documentation were. They said that data was knowledge that could be expressed in digital or graphic form. Information was an elaboration on, description of, or extension of the data; and documentation was a compilation of both. If you draw a line between documentation and information, you will have defined the commodities that are in the Technical Information Centers and in Documentation Center operations.

Mr. Wright has given you a quick view of a lead-in to an Army program. I am going to give you the overall of the program, discuss one or two things of special significance, and then the remainder of the team will give you some of the Army activities that are a backup to this program which would be of interest to you.

We were required to begin in 1963 to organize and staff the Office of the Director of Army Technical Information. This was done. It was organized, but it has not been staffed other than for Col. Aines, Mr. Wright, and myself. I take that back. One gentleman joined us yesterday and inherited immediately five projects.

Mr. Wright mentioned to you that there had been a preceding on-site survey of STINFO operation. This had stemmed from a requirement of the White House that was placed upon the Bureau of the Budget, and came down to the Department of Defense and hence, to the Army through the National

Science Foundation route. It was in answer to a challenge by Senator Humphrey, and this was based upon a statement that he had made that even the President of the United States could not put a finger on any given idea that was on-going in the Executive Branch of the Government. It turned out Senator Humphrey was right.

The other thing we were required to get underway was the Army standards for technical reporting. You are going to see this reappear again under what is known as the LASS Program. I will tell you what LASS means when we get down a little ways.

The other portion of the administration required that we initiate the beginnings of a Chemical Information and Data System which has come to be known as the CIDS Project. The various categories that began with administration right here were a continuation of on-going activities. Items 2, 3, and 4, which are under program support, exploratory development, and research are those portions of the Army program which were funded for operation in Fiscal '64. These funds are over and above that which has been identified in the Army for conduct of its current operations.

Under program support, the on-site survey was initiated. Mr. Cowgill is going to tell you a little about that survey. The revision of the Army Research Task Summary and the operation of that program began and is underway. I am going to show you some of the formats that are used in that program.

There is a training and career management program because one of the studies you saw listed up here on the board under these seven areas of the Ad Hoc Group dealt with people, the training requirements, the staffing requirements, and the program they would have to administer. This was done by a group of people chaired by a colonel from CONARC and had such folks on it as the Army Personnel Research Office, the Humrel operations - these are the Human Relations operations - and the Deputy Chief of Staff of Personnel; all worked with us in this area, plus folks from other elements of the Department of Defense.

In exploratory development, we have machine language techniques. An example of this you will get in detail from Mr. Croxton when he tells you about Alpha I which is underway at the Missile Command down at Huntsville Arsenal.

Another example is, how do you recover chemicals based upon chemical structures from a massive file of between two and a half and three million chemical compounds. The Chemical Information System operation is already underway. I will give you a view of five phases that are in this program. The Technical Effort Locator Exploratory Development Program will be given in some detail by Mr. Olejar. There are other efforts underway in the Army, primarily centered at Frankfort Arsenal. However, Mr. Olejar's presentation will cover the essential features of this program.

In the research area, we talked about input-output devices. One of these was a chemical typewriter which was presented for display and

operation at an industrial briefing at the Shoreham Hotel on the 17th of this past month.

Transmission systems - how do you get information over a wire or wireless hookup that can reach around the world? Information network design - you can immediately see that, with the diversity of world knowledge, a net work of some type must be created in the new contact of Documentation and Information Centers.

How are we organized in the Army to carry out this program? The Research Support Division of the Army Research Office happened to have in it one Branch that has a sign hung on the door which said, "Science Information." This became the focal point for the Army staff effort. It was the Research Support Division that carried the Army responsibility for the Ad Hoc Group studies. It was reconstituted, minus two Branches - Overseas Research and Contracts and Grants - into the Scientific and Technical Information Division, with Col. Aines as its Chief. It has three Branches - a Publications, a Reference, and a Special Activities Branch.

The Publications Branch handles such things as the Army R&D news magazine which has a phenomenal circulation, approaching 40,000 per month. We have received a report indicating that this is one of he most popular periodicals that can possibly cross over the Iron Curtain. We have been cautioned as to a very careful evaluation of its content before publication. This Branch also handles the monograph series. It is the interface with radio and television. It is a point of release and review of speeches and things like this that originate within the Army Research Office.

The Reference Branch has two sections - or two centers - to it. One is a Reference Center. This is not a library in the conventional sense of a library, but it functions as a library. It is primarily an operation of information about information, and it gathers this kind of data. The other is a Support Center operation whose prime mission in life at the moment is getting the Army Research Task Summary Program underway. I am referring to these because they have an impact on the Air Force and the Navy.

The last is the Special Activities Branch. I mentioned earlier conferences, meetings, and symposia. This Branch is concerned with such things as the Army Science Conferences. The various Science Fairs sponsored by the Army - all Scientific and Technical Information programs that have to do with the interface between people. They also inherit, at Department of the Army level, the inter-disciplinary types of symposia and meetings and, strangely enough, only three people carry out this program.

The operation that I have just described to you is an internal support operation for the Army staff. The box that was on the right of the Director of Army Technical Information is broken up into three subelements. One is Research and Analysis; a second is Systems; and a third is Communications and Automation.

The Research and Analysis Office is primarily concerned with programs. I mentioned that there were only four people today, three of them in the Head House, one of them in Systems. There are no other personnel aboard. This Research and Analysis Office will also be concerned with the documentation, the linguistics, and the library aspects of the Army program.

The Systems Office is just what it says. It is the design and monitor of all Department of the Army information systems. I am going to tell you about two of these systems.

The Communications and Automations Office are both hardware-oriented and are the interface between the systems and the hardware. They are the people who prescribe what kind of communication networks will be required to carry out the Department of the Army program.

I mentioned the Army Research Task Summary. This little document is known in the Navy as the Navy NRTS, and in the Air Force as the Basic Research Resumes. Many of you have come in contact with this little document - not in its new form - but as the DD-613. The program of the ARTS goes back for all of us to 1956. You can get an indication of the number of tasks reported between 1956 and 1963 by seeing that they have been increasing at a fairly rapid rate. A product of this report was three items. We published six volumes by major scientific fields; we published an index to it; and we published classified supplements, with very limited distribution. The six volumes of the index could have been purchased through the Office of Technical Services; however, the last one distributed by the Army was dated 1961. You can see that whatever you have acquired as an ARTS document was historical information.

It takes approximately three months from the date of submission of the data to make the initial distribution of the document. This is the old kind of format that was used. You notice that it is very similar to the NRTS and the BRRS and that is all the information content there was in this document.

As the result of an Army study, the document was revised, and the face came out looking like this. There are a few items that have changed on it. We have broken out in here the four items we commonly receive requests for information on that were not on the other form. These are listed as Items 1, 2, 3, and 4. They can all be different, or they can all be the same.

We have further structured this around into a project task-sub-task reporting system. This gives a new kind of visibility to these projects, tasks, and sub-tasks that have heretofore been known. The date of approval of the work is missing, only the date of report, because the date of approval is rather a nebulous thing when you are referring to it. Do you mean the date it was approved to do the work, the date the funding was applied against it, or just what do you mean in this context? So, we settle for the date of the report.

The key words are on here now. The folks in the field were told they could or could not use the ASTIA Thesaurus, but not to be limited by it. The reason being, we found that in one activity alone the thesaurus was deficient

by what is now somewhere around about 26,000 Army terms. This is being corrected. The program is a joint effort between the Army and DDC now. The Army also has several micro-thesauri operations underway in several select areas. You will be hearing a little more about this as it develops.

Supporting projects are really those that pertain to inter-agency operations. You can see these kinds of things reflected in Items 11 and 12. The second page puts the information to be published from this first page into an automated context and now permits an identification of work in a way that had not been possible heretofore, primarily because you can go to machine operations to affect the listings. I won't go through these, but just give you an idea. The last page is a rather odd page, absolutely blank. There are some real cuties that appear here - such as applications of this work to the civilian economy; the progress reports on the work. These are the kinds of things that are listed.

The salient feature of the system is the updating provision with a review every six months so that you do not have to go back and begin the annual preparation of these documents.

Why do I bring this up and go into detail here at this kind of meeting? Because this is a source for librarians of the kinds of work that may not be obvious to them in their own installations and activities. It is also one of the keys to the people doing that work. It is also an indication of what they might be doing by virtue of that key word listing that is there, because that key word listing can be matched against an abstract that you are going to hear about, and has already been adopted by the Army, which was the ASTIA Form 28. It can also be matched against an individual's information profile.

I am going to go just for a moment into Chemical Information System to give you an idea of the kinds of programs that are underway, and what an information system might look like. The Army picked chemistry as one of its prime areas in the science area to take a look at. It turns out that we have at least sixty Army activities with chemical holdings. They range the whole gamut of science because, when you begin to list the kinds of information that are here pertaining to compounds, composites, and mixtures, you have covered just about all there is, including the material sciences area. Another reason for this is that it costs dollars just to synthesize chemicals. Here is an example of the cost that goes along with it.

There are at least three compounds on the average reported per document. This means that there is at least $15,000 worth of knowledge per document available on somebody's shelf somewhere. This is just in the synthesis area alone.

In looking at the program, it further turns out that, if you go back and you list the information requirements which are commonly called a shopping list and a selling list (shopping list being information requirements and selling list being information product), you find that in the biological and pure chemical area alone, there are 330 items of information that are needed to carry out just one program. The Army is interested in all two and a half to three

million chemicals. We are not talking about a small file. We are talking about a file whose data content approaches one billion packets of information, and this is phenomenal.

You can also see that you cannot gather into one place all this data with the scientific confidence to answer meaningful questions. Now you begin to understand why it is that the Department of Defense said there would be a centrally coordinated, de-centrally operated system.

To get an understanding of what was going on in the chemical area alone, the program was divided into five phases initially. All phases are underway at the same time. It turned out that, in the Office of the Surgeon General of the Army at Walter Reed, a chemical typewriter was produced that can uniquely encode chemical structures in a matrix or topography system and give this back to you on a sheet of paper in exactly the same array that a chemist understands. This was an odd place for it to come cropping out, but it happened because of the radio-biology program and the need there for them to take care of their information. The Surgeon General was given the job of re-engineering that device and of getting the first computer program for search of chemical structure underway.

Under Phase 2, the Chemical Research and Development Laboratories at Edgewood Arsenal were given the responsibility of coming up with an action plan for the building of the network, and the second task assigned to them was to develop the first operational center for handling of the traffic that would be on such a network.

Phase 3 was handed to the people at the Electronic R&D Laboratories at Fort Monmouth, New Jersey. These people were required to look into the automations aspects.

The Missile Command, under Mr. Croxton at Redstone, who is the Missile Command Project Officer, was given the job of looking into the software or systems area. Note that there is an overlap here between Phases 1 and 4.

Under Phase 5, all other participants under the leadership of Frankfort Arsenal were required to produce the shopping list and selling list that I have referred to. Now why is this important to librarians? Because out of it is going to come an identification of where there are data holdings that they can get information from. In addition, it will give you some idea of the kinds of information that this category of scientific personnel is looking for.

The last thing I would like to talk about is the thing I had mentioned as being LASS. It is called a Library Accounting and Service System. Mr. Costello, up at Munitions Command, sat in with Mr. Cowgill one day and helped dream this name up. It is so new, you see, that we don't even have a regular slide. As a matter of fact, this slide was prepared just before lunch for you, so you are getting some information that other folks haven't gotten yet.

What does this program consist of? You remember we saw something that set standards for technical reporting. Such a standard has been prepared and has been staffed in the Army Operational Commands. The comments are being consolidated now, and the final report, which will be issued as an Army Regulation, will be forthcoming sometime in the month of November.

An Abstract-in-Advance series is the automated portion of the abstract. Mr. Olejar is going to describe a little bit about what he has done with this in the Army, and how it fits into a library program.

The automated library system which I referred to earlier under Mr. Croxton is also a part of this program. He is going to tell you about it. The non-automated library systems will be a part of this program - those areas which do not require sophistication in machine operation.

Together, all of this will lead to a unified Army library system. To implement this will be a series of new ARs and procedures to include even the card formats, the traffic patterns for routing, and all that goes with setting up such a system. The folks within the Army are going to be asked to participate in the design of their own system. Every other system that we have ever designed, including the Chemical Information System which is underway, the Engineering Information and Data System which is underway, and this program are being designed - their recommendations are being prepared by the people responsible for implementing these programs.

You will find that your old friend, Mr. Cowgill, will be the Chairman of the Action Committee - the Working Group - that will oversee these areas. You will find that Mr. Croxton will be the man in charge of the automated aspects. You will find that Mr. Costello from Picatinny will be the one in charge of the unifying aspects because he is knowledgeable on both sides. No one has been selected as yet to monitor the non-automated aspects of the program.

Of course, out of this will come the final products, which we will staff from Army staff level throughout the entire Army, and that will become the Army system.

Our next speaker, will be Mr. Logan Cowgill. He is going to tell you a little about the Army on-site survey and the impact that this will have on librarians and library assistants and library systems.

MR. COWGILL: As Peppy has said, the theme of my remarks this afternoon is the importance of the on-site survey program results in compiling a data base for all future Army technical library programs. I might shorten that a bit to say in short, librarians "love that data base." More seriously, one of the major problem areas in technical library operation is the result of history and tradition. This is going to be shown, I think, as a result of our survey.

History and tradition is a mixed bag in its influence on any field of specialized endeavor, and especially so in its influence on libraries. In plus,

and in favor, history and tradition have provided a strength-giving entity which has joined together libraries of whatever kind and size into networks of mutual help such as, of course, the interlibrary loan system itself. All librarians are acquainted with this aspect of the history and tradition. In minus, history and tradition have supported misleading and fallacious images of other worldliness and culture with a broad A, as representative of the library.

It is this image, plus a misconception of the library's traditional place in administrative structure as a service organization which has inhibited the development of the otherwise normal cost accounting procedures, which are so necessary for securing a significant degree of financial support, in any important enterprise, public or private. Thus, even today, as Becker and Hayes, in their recent book state, there are few accurate pictures of precisely what the cost of individual library operations are. Even at the local installation level, costs of library operation are often not isolated. Perhaps it may even be claimed that they are concealed.

Often, the only readily available breakout is the personnel cost of those positions which have been formally allotted full-time library duties - procurement costs, processing of catalog costs, circulation, dissemination, searching costs (man, that's a real buckup for wrigglers), words and phrases, such as overhead (now I am using Army terminology), O&M, RDT&E, Industrial Fund, Resolving Fund, among others. These blithely fill the air, to add their confusing color to that occultly idle design which we call library economics.

For these reasons, the purpose of the on-site survey and its Sterling Steering committee, known to some as OS4 - that is one atom of "on" combined with four atoms of "snoop" into one roly-poly molecule - is of prime importance to the future of librarians. This purpose can be simply defined as the tearing away of all seven veils of the library modesty so that the Army's technical information holdings, handling procedures, and costs thereof, stand forth naked and unashamed for judgment.

Why is it - now is the time for modest concealment past because, even the lack of an economic data base in the past was perhaps not serious when service demands were limited, and could be satisfied by the dedicated service of a few altruistic people.

Current needs for increased development and increased investment of dollar resources, particularly where hardware and equipment is involved, demand an accurate and reasonably comprehensive base for planning and supporting effective library and information programs. Of course, the data base which will be compiled as a result of the on-site survey will include much more than library economic or funding and statistics, since the survey will also inquire into kinds and amounts of information holdings, processing and handling methods, circulation and dissemination procedures, search services, to mention but a few areas of interest. Yet, although the importance of all the mentioned areas is incontestible, they all in fact succeed or fail in accomplishment, based upon the economic facts of life.

Libraries have been saying for many years now that they are one of the undeveloped areas of technological progress. Well, if this is so, the survey can only reinforce the need for increased library support. Although the actual survey, except for pilot studies, will not take place until after the first of the year, the effective development of the comprehensive questionnaire and the training of Department of the Army personnel to make the survey, these two responsibilities, the responsibility of an Army contractor, C-E-I-R, Inc., will require a guidance input from librarians in those areas of their special competence. In other words, the contractor does not have the magic word nor does the Army. Both will depend upon the libraries for providing this information as the questionnaire and the survey itself is designed and set up.

The OS4 Committee (one atom of "on" and four of "snoop") stands four-square behind the open door policy. Our Chairman, I am sure, would reinforce my statement in this. Our Chairman is Mr. Martin White of Aberdeen Proving Ground. Our policy is "open door." In other words, the door of the Committee is open ever to advice at any time and place. Perhaps I should say, there is one kind of advice we will probably not be likely to accept, and that is the one kind that I think librarians are least likely to give - and that is, turn back, oh, survey, in your flight.

What is the immediate impact upon the library of the on-site survey? First of all, somebody is going to have to take this survey, the actual taking of and compilation of the information. This will be done by Department of the Army personnel and will be done locally at your installation level. The person selected to do this - selected to be trained by the contractor - is a very important cog in this whole operation. This is obvious - that he be the right person, that he be the person who does know what is in your operation, who does know people, who does know methods of operation, who has ways of finding out things naturally, will be the type of person that the contractor will be seeking, and that we hope will be designated for taking this particular survey.

I mentioned the contractor. This contractor is located here in Arlington and is even now making his first on-site visit at a local installation in order to get the feel of the problem. This first installation which has been selected, which he even now - today or tomorrow - is visiting, is the Engineer Research and Development Laboratories at Fort Belvoir, Virginia. There he will see, I am sure, something of the complications of his problem. He will see that information is easy to define on paper, much more difficult to handle in practice. He will see, as I say, something of the dimensions of his problem but, after all, ERDL is only one establishment - a fairly broad one, but only one - so he will want to have input from each and every one of you through our Steering Committee. The contractor cannot do this alone, of course. The Government has the responsibility to see that it is done in the best fashion for the Government. Therefore, the Steering Committee has been set up to constantly monitor the contractor every phase of his operation.

Under present circumstances and planning, he will make preliminary visits at random. He will not, of course, visit every installation. After

these visits, he will ccme back and begin to assemble what he believes to be the proper questions, in order to elecit the proper answers to his survey. At that time, the Steering Committee will review these questions and add to or revise them. Then we will go on to the next part of the program which will be to have a pilot survey in one installation with this questionnaire.

Once this questionnaire has been actually tried out, it will be again returned to the contractor with any necessary revisions. In the meantime, the contractor will have also been studying another very important problem which I mentioned briefly before, that is, what type of person should the local Commander be advised to select.

Remember, the local Commander is going to select, and he is not going to be told who or what to select, but he is going to be advised as to the type of person we would like to have take the survey at his installation. We have to give him guidance. This is a very important part of the program, and this is one which the Steering Committee and the contractor will both have to work on.

I can mention certain other aspects of going into acquisitions or procurement. This involves economics, cataloging, organization of materials, search and reference, and other services - translations and so forth. I am sure all of us know what a library does and what his library does, so I think each one of you should look at this and see and say to yourself, "Practically every part of my operation is of interest to this survey."

I think we are pretty much behind time, but I would like to take the opportunity, and perhaps, if you don't mind, a little time from the break, should you desire. Do you have any questions at this time that you would like to ask, or would you rather wait until after the break?

I am assuming, then, that we will go ahead with the break and be on time.

MR. COWGILL: We will continue the second concluding part of our presentation here this afternoon.

Our next speaker is Mr. Paul Olejar, whose subject this afternoon will be Trials of a Technical Effort Locator System and Abstracts-in-Advance.

Mr. Olejar is Chief of the Technical Information Division of the U. S. Army Chemical Research and Development Laboratories at Edgewood Arsenal.

It is very significant that we are beginning in the chemical field in two areas. One in this particular system that he will tell you about, and the other which Mr. Vlannes had mentioned recently, the overall Chemical Information and Data System.

MR. OLEJAR. I am glad of one thing. In fact, I am glad of two things. One is that you had a break just before you had to come back here to listen to me. The other is that your program called this a Workshop. After

seeing this one slide that Mr. Vlannes showed of a symposium, I am glad we are not a symposium. The bla-bla speaker - you remember him?

My subject concerns the trials - I didn't say tribulations, I said trials - of a Technical Effort Locator System and Abstracts-in-Advance.

The Laboratories I represent have carried on a number of experiments, techniques, and methods of bringing specifically desired information more quickly to the person needing it. Most of these have involved at least partial utilization of punched cards or punched tape techniques and equipment.

These experiments or pilot studies have been conducted subsequent to the feasibility studies which led to our current conversion by private contractor of about 25,000 reports and titles in our Technical Library (headed by Miss Alice Amoss) into a punched coordinate index which ultimately will become the core of a computer storage and search system, serving not only Edgewood Arsenal and its substations, but also contributing to the Army-wide STINFO system.

Two of the corollary experiments that I will discuss today are integral to STINFO. I think they will have an impact upon military library operations.

The first of these was a series of trials intended to prove out for the then existing Chemical Corps a revision of the techniques that were used by the Air Force in its current ARDC technical effort operations - CATE, as you may know it.

Expanding upon that concept to provide a foundation for a Technical Effort Locator System as an integral part of the Corps' Technical Information and Evaluation System was what we, of course, call TIES. I need not go into the history and development of TIES except to point out that it was a rather bold plan to bring both management and scientific information handling requirements into an integrated operation, utilizing the most advanced computer and communications techniques and equipment.

This program was first approved by the Chief Chemical Officer in December, 1961, after months of work by a committee of which several members are present here today.

You may, if you looked, remember what you saw on the screen a little earlier - certain parts of the Army STINFO program has skeletal remains of TIES. One of these, as we stated earlier, was the concept of a Technical Effort Locator System which, as is customary in Government, we refer to as, acronym of TEL.

Briefly, TEL is designed to make possible the prompt, selective dissemination of information on current technical work to both management and to bench personnel as needed, to facilitate the program of research and development. This is an objective all librarians have. Specifically, it should tell who is doing what, where, and to what purpose; it should pinpoint the scientific or technical data pertinent to that technical effort, particularly

data contained in the published reports that military librarians are having such a hard time finding space for, as of now.

As stated by the Chemical Corps in its preliminary description of TEL, it was intended to make this service available not only to Government-employed Project Managers, but also to their associates and counterparts in the academic and industrial worlds. The Chemical Corps description continued as follows, and I will read this:

"TEL will provide up-to-date information which identifies the responsible individual performing technical work, his location, and the related sources where technical data may be obtained. TEL's service is not intended to furnish published reports, studies, or papers. These may be obtained through your local information servicing element which is being established as a part of the CBR TIES program."

I am sure you already see some implications here to your library staff if there were a fully integrated, fully operating TEL system in your establishment; bringing to light through periodic reports of the researchers themselves, new data in a given subject matter field or line of investigation. It carries overtones to the reference librarian and the bibliographer, as well as to the acquisitions and indexing office.

The primary recipient of TEL information, of course, is the Research Manager and Project Engineer. In order to make proper management decisions and utilize his scarce technical resources most effectively, such a man needs all available up-to-date information quickly, accurately, and completely. Any Project Manager worth his salt, of course, has personal knowledge of fellow scientists, their qualifications and abilities, their achievements, and their current work. He can recall with ease the names of several outstanding scientists in a particular line of study or scientific field. He can pick up a telephone, write a letter, or get on a train or a plane and visit such people from time to time, and he can further exchange technical information with his peers and contemporaries at scientific meetings.

So why do you need TEL? Well, of course, he can go even further than this. He can go to the library and scan some of the journals that are up there on the racks. His only problem is time - sufficient time - and the higher he climbs in the hierarchy, the farther he seems to get away from the individual fellow scientists and the more of them there seem to be for him to be apart from.

This is the reason such things as the Form 613 - the reporting cards which are not very well liked by the bench scientists and the revised Army Technical Report or ARTS which you saw described earlier - became more and more significant the higher we climb the ladder from Project Manager to Laboratory's Director, to Chief Scientist of a Command, and on up through the Army, Navy, Air Force, and Department of Defense Headquarters.

As a matter of fact, TEL is an important adjunct of ARTS, supplementing and amplifying information in several respects and making certain aspects a

valuable tool for the bench scientist as well as the Manager. The studies on which I base these statements were conducted at our Laboratories during the spring of 1962, some 15 or 16 months ago. The Technical Information Division of CRDL received the assignment partly because some work already had been started and partly because the Corps wanted to concentrate the trials in the two Laboratories - that is, CRDL and the Biological Research Laboratories at Fort Detrick, where most of the technical efforts of the Corps were located. However, all Commands and all installations took part, for one must not assume that technical operations and scientific skills are monopolized by Laboratory's employees.

By April, 1962, a reporting form had been developed and approved as Form 93 Test. Twenty-three Project Officers had been designated at various Command installations and activities. I have only two of the slides with me. I will show you Form 93 Test at this time.

As you see, the card called for identification of the Technical Effort Leader who filled out the report and gave his name - in this case, Dr. Simms - his address, his phone number, extension, and other pertinent information so he could be easily reached. Then, in Section 2, he was called upon to describe the broadest area of technical effort he was engaged in, examples, being in this case, medicine, but it could be physics, chemistry, psychology, ordnance - anything of that nature. Then, the specific subdivision or fields of his area, such as optics, physics, organic if his area was chemistry, and, in this case, therapeutic prophylaxis chemical agent poisoning in humans.

Now came the hard part. The Technical Effort Leader was called upon to select six to ten words or short phrases which best described his work. You may call them subject headings in your library, or modifiers. We call them keywords, later changing the word keywords to descriptors so that we would be more in harmony with the ASTIA terminology and their thesaurus and microglossaries.

As you might well imagine, there was great divergence. Our basic guide was a word list compiled during this feasibility study by Documentation, Inc., in our library, and it was based upon the coordinate indexing of about 2,000 reports. Therefore, it was not sufficiently comprehensive, nor was it organized according to the ASTIA thesaurus format and logic. However, we were able to obtain a surprising amount of information from the 350 or so persons who were invited to participate in the test, and our punched card operations people were able to retrieve and sort out rather specific information with what we thought were good results.

As you see, other portions of the Test form called for identification data as to the project, task, and other technical workers assigned to the effort, starting and completion date, some of which information is now in the ARTS or always was in the ARTS, actually, but would not be needed in the new Technical Effort Locator System. You might call it management-type information

The persons reporting also furnished instructions about the release of information on the card. This is one of our big problems - that all existing limitations on its releasability would be known and proper safeguards could be taken. That is Section 5. For example, proprietary rights are of considerable interest in our area. The security classification, both of the effort and of the information upon the card, is shown at the top and bottom. We were particularly interested in a narrative description of the Technical Effort and its classification.

On the reverse side, we ask for a bibliographic description of the evaluated reports, regardless of authorship, that had emanated from this Technical Effort. This would be a typical bibliography. This request produced some problems, especially if the project was of long standing, or had several different Project Leaders during its life. But we felt that the results were worthwhile in producing a concentrated reference source.

Incidentally, in order to check it out, we made a spot check of the replies received by the Project Leaders on these cards and went to our Publications Section records and to the Technical Library indexes and holding lists. Much to nobody's surprise, there were some real deficiencies. In a few cases, the Library did not have the report - believe it or not - but in most cases, the Project Leader either did not know of the existence of the report or had forgotten all about it and, therefore, had not reported it. In some cases, he listed reports he had written on other projects, so this spot checking did serve to pinpoint and highlight some of the things we needed to take care of as this project gets into the future operations.

A detailed accounting of this report is being written. We hope to have it published before too long. This experiment was evaluated along with other information gathered by the subgroup of the Army Ad Hoc Committee on Scientific and Technical Information, which was described to you earlier last October and November. The Group recommended that a reference service, such as TEL, be established on scientific personnel to provide information at the first line supervisory level on who is doing what and where.

I am emphasizing the first line supervisory level at this point. As you saw it on the program Mr. Vlannes showed, it was adopted. The System was to provide regularly updated information on a continuing basis. The Group also recommended that implementation be assigned to Task Groups composed principally of information-oriented personnel - that is, Technical Library and Information Staffs working closely with Civil Service position classifiers, as well as with mechanized retrieval experts.

The Army STINFO program is now approaching high gear. I think it is conceivable that some of you in this audience could shortly be engaged in this work - in Technical Effort Locator - with the objective of producing the initial Army Directory of Technical Effort in terms of scientists and experts within the next few months. I do not know whether you call this a warning or an alert, but take it either way.

As a current on-site survey of scientific and technical information, as the OS4 program proceeds, I am sure TEL aspects will become more clear and more visible.

The second trial which was conducted at CRDL deals with the selective dissemination of Abstracts-in-Advance of publication of the technical report, together with author-inspired and editor-corrected keywords or descriptors for retrieval purposes.

We call this Abstracts-in-Advance. We have not coined an acronym for reasons that become qutie obvious, I am sure, when you say AIA aloud. We tried to say that, as we say TEL, but you just can't say AIA except as a series of letters; so, Abstracts-in-Advance is our title.

Those of you now engaged in negotiations with the Defense Documentation Center or ASTIA, as I usually say, on the supplying of abstracts of all reports which have been issued by your agency or installation (I presume you have started such negotiations), together with the appropriate keywords of descriptors, may welcome such a device as Abstracts-in-Advance - not in behalf of your current problems, but in behalf of the future and of your successors as librarians.

The supplying of abstracts to Documentation Centers or to our own Technical Libraries is not the principle purpose of Abstracts-in-Advance, even though that may be a very desirable effort. The basic goal is to provide the Director, the Project Leader, the field engineer, the analytical chemist, the physcist - in fact, any person engaged in military research, development, test, and evaluation - with the latest pertinent technical or scientific information more quickly than we have ever been able to provide it before, because he needs it.

Those of you who may be acquainted with CRDL know that back in 1956, in order to telescope the time interval between the generation of information and its receipt by the man who needs it, there was devised a technical memorandum as a quick announcement device, issued by the Project Leader himself, to transmit data from one research engineer to another, to test engineer combat development analyst and others having need for fresh, new data. Certain limitations were placed upon these tech memos. The number of copies, manner of reproduction, and specific disclaimers were set forth; the first and most important one being that a tech memo expired within six months. Some of you may have handled tech memos from CRDL because they did get into the library circuit now and then, but basically, they were current documents. This disclaimer was later amended to merely publication of a disclaimer which cautioned any reader that the information in this tech memo was not necessarily based upon evaluated data and it could be, and most likely would be, superseded. Initially, the tech memo was issued for limited distribution, that is, 25 copies for specific limited information purposes. We find that a tech memo has a long life, however. This has been one of the problems of the device.

The reason I am citing this is to show that there was a need for telescoping the time interval. People needed the information faster than we were

able to give it to them through the formal reports, such as you stock on your shelves. In the meantime, strenuous efforts were made to shorten the time between the completion of a piece of work and the review, editing, publication, and distribution of the technical report. Much of this time-shortening burden was placed upon the technical editors and their associates, but some attention was also, I am glad to say, paid to getting manuscripts completed, or written, and reviewed more promptly in order that they could be submitted for publication earlier.

Our goal has been publication of a technical report within sixty days. In general, we have been achieving this goal. In fact, we have put out thick reports within two or three days on an emergency basis, but I would say that, generally, the process requires fifty to sixty days. Although we feel this is commendable, the faster tempo and increased pressures upon the Research Staff, a shorter time period is indeed welcome and needed. This is especially true with respect to technical information being provided by contractors.

How to telescope time? Our approach was pragmatic, perhaps even opportunistic with arrival last winter of another paper tape punch and typewriter in our Division. This one was equipped with an attachment for punching Hollerith cards.

The time seemed right for a new attack on the time required to publish technical information. The authors of tehcnical reports in CRDL had been, for a number of years, required to provide along with their abstracts a list of suggested indexing terms, or keywords, as we call them, for publication. I do not need to describe the trials and tribulations of trying to get an author to describe his work in terms of keywords. Some of you may have gone through this and know what I am talking about.

We had, by last year, refined the procedure sufficiently, we thought, and had developed certain guide lines which would enable us to proceed upon a more energetic basis, primarily through the assistance of the Technical Library staff - Miss Amoss and her principal assistant, Miss Thornton - in working with our editors in their work with the authors themselves in developing these keywords.

There is a report in process on this particular study. Now, with authors providing both abstracts and keywords and with the new DDC abstract format known as ASTIA Form 28 with space for author's key terms, our new paper tape punch typewriter provided us with the opportunity to do several things at one time.

First, we could duplimat the abstract for inclusion in the published report. Second, we could obtain a paper tape which would provide us with copies of separates of the abstracts for publication, independently of the report. Third, we could preserve this tape after the addition of certain identifying digits or the cards could be punched and preserved to provide a base for an automated information retrieval system.

We felt that if we could distribute the abstracts at this point, we could make the information available from thirty to forty-five days before the report itself was issued. We revised our editorial procedures slightly and put our librarians to work developing a distribution pattern.

We were preparing to submit this proposal for approval to the Headquarters of the Laboratories when we received a very unexpected assist. A brain-storming session was held by the Division Chiefs and Directors of the Laboratories. They recommended, completely out of the air, that the Technical Information Division circulate abstracts and bibliographic data on new reports available to the Laboratories, not only in the Library. The recommendation called special attention to the delays in reports being received from contractors and grantees. Of course we welcomed the idea.

The principal difference in our plan was that we proposed to try this first with only in-house reports and that we should make the distribution discriminatory (that's a bad word) and selective, based upon a need-to-know, on high priority programs. This was accepted by the Division Chiefs and Directors.

Last April, we asked each Director to select about twenty researchers and Project Leaders to take part in this experiment. We made several distributions of abstracts, hoping to do this on a bi-weekly basis. At first, we used our own format, but we are now using ASTIA's Form 28.

You may be well acquainted with ASTIA Form 28, but I would like to call your attention to Section 13, which is the author's key terms. The asterisk indicates the principal descriptors that he believes applies to his particular report. Right below, in Section 14, is space for the discipline vocabulary which ASTIA indexers would put in, or which your own indexers would put upon this report. They need not necessarily coincide with what the author said, as you very well know. This format is one that is now required of us. There may be a slight change from this one I am showing, which is the Test Form, but this is the type of abstract that will be supplied with reports. It seems that, with this requirement and the reverse side (or the next page), there is ample opportunity to develop a system of disseminating Abstracts-in-Advance.

There is the abstract itself, and below it, some additional information is provided by the indexer for annotation purposes. We interviewed the people receiving these questionnaires, or abstracts, asking the usual questions. Did this provide sufficient information? Was the document relevant to his field of interest? Would he be interested in receiving additional abstracts? Would he be interested in receiving the reports?

We received 627 replies which were generally affirmative, and 120 which were negative, which, I guess, is a good enough margin. I will read one or two of them since they may be of interest.

One came in from the Air Force as follows: "I consider your Abstracts-in-Advance idea an excellent method of getting timely information to technical

personnel. CRDL is now sending reports in the specified areas of interest to several Air Force organizations. The advanced abstracts could be sent to these organizations rather than the reports, and reports could be ordered on the basis of information contained in the abstracts. This method should be more timely, and report requirements would be better defined. However, this concept of distributing reports will not work until you get complete coverage of CRDL reports."

The reason I am reading this is to show that we have generated ideas just by sending him these abstracts. Here is a different kind.

"Abstracts such as these are practically of no value (says the writer). The extremely vague and generalized treatment gives no concept of the scope of tests, conditions of tests, or results. The abstract serves no purpose in telling the reader whether he would find the original report of use."

I am reading this, not because I consider this a criticism of Abstracts-in-Advance - I consider it a criticism of the abstract itself, and maybe of ourselves for letting it go through. However, when I brought this reply back to the people who were conducting the survey, their reply was, "Well, this report was secret, and we couldn't write it any other way.

Do you recognize the problem? As a matter of fact, virtually all difficulties were related to the limitations that we had on keyword selection or to the limitations on the abstract itself which were placed by the security classification of the material. A few were related to the task of defining some terms or keywords a little more precisely. I do believe that if we could solve this problem of security classification a little more equitably, we would have in our hands an extremely worthwhile and highly desired service that we could give to our research and development people.

If you remember Form 28, which I said is the reworking of the author's keywords into the disciplined vocabulary used by DDC or by your own library, is the key to making the abstracts an integral part of your library service. I think the librarians have a wonderful opportunity here to give leadership to the development of an Army or DOD-wide system for the selective distribution of Abstracts-in-Advance of publications so that our National Defense Program can proceed. The librarians can not only lead, but make substantial contributions individually and technically.

I am sure all of you see some connotations here that I may not be aware of in providing bibliographic aids, in facilitating the announcement and accessions of information on a custom-tailored, up-to-the-minute basis, to your most important patrons, your Project Managers and first-line supervisors.

This is a program which, as I said before, is now receiving Army consideration for wide implementation. I am sure your suggestions and recommendations will be welcome. We hope you will volunteer them.

MR. CROXTON: When I attended my first military librarians' workshop last year at White Sands, I did not expect to be given the opportunity to speak to you so soon. However, Mr. Vlannes asked that I cover for you some of the automation work we are doing at Redstone Arsenal.

The few minutes that I will take will be concerned with a progress report on the system to which we have given the acronym, ALPHA I. (Fig. 1) In our development of ALPHA I, we have attempted to view our library-type activities and our information retrieval efforts as an organic whole and to devise an integrated method which will allow us to solve at one time both the more or less administrative aspects of running a library, as well as some of the more sophisticated subjective aspects of answering questions. We have dubbed our current condition a first generation study because we know that even before it is completed, we will be trying to improve the smoothness and sophistication of both our methods and our machine techniques. In developing ALPHA I, which differs from any other method with which I am familiar only in that it is a truly integrated study, we have undertaken the work in the same way that any good development program would be undertaken. We assembled an interdisciplinary team of people who could bring to bear on this problem all of the necessary skills - in this case, scientific skills, library skills, and computer system analysis skills.

Like many government projects, this is being done with both in-house and contractor participation. Specifically, it is a joint activity of the Redstone Scientific Information Center, the Computation Center of the Army Missile Support Command, and the Computer Division of the General Electric Company, contractors for the operation of the Computer Laboratory of Marshall Space Flight Center, NASA. Members of each of the three groups have made both general and specific contributions.

Let me get the question of contributions and credits settled to begin with - we have borrowed information from everyone that we found who had what we felt was a good idea. We happily credit Picatinny Arsenal, IBM Corporation, Eli Lilly, Sandia Corporation, University of California, and General Electric's previous work at Western Reserve, University of Chicago, and MEDLARS. If we have used ideas originated by anyone else, I hope they will let me know so I can include their names in any future presentation.

Before discussing ALPHA I, a few words about our activity at Redstone Arsenal will help you to visualize the sort of problem we face and to explain briefly why we were not only interested in automation, but are actually forced to it. (Fig. 2) Redstone Scientific Information Center serves both the Army Missile Command and the Marshall Space Flight Center. The potential patron group approaches 20,000 employees. In addition, the on-site and local contractor organizations, and others who call upon us for service, add nearly another 50% to our patron group. We estimate that we serve 6,000 scientific and engineer professionals spread over an area of slightly more than 100 square miles. Their requirements for information service increased by over 50% from last summer to this spring. Naturally, manpower cannot be added at this rate. In fact, it has been necessary, due in part to the Army reorganization which took place last year and to other

factors which decreased the number of employees available in our command, to decrease the number of people performing library functions in spite of the heavy increase in service requirements - quality naturally may have suffered.

Our long-term answer to this problem is ALPHA I. As we approached the study of ALPHA, our first problem was to define a library. (Fig. 3) This was not too difficult, for we feel a library can be considered to be a communications link. A link through which a worker of the past speaks to one in the present, or a worker of the present conveys his thoughts to anyone who may require them. As we look at this diagram, some of the gross characteristics which ALPHA must have become evident. We really require only information about the patron, and about the holdings, whether they be books, periodicals, documents, or all three.

After our systems analysis of what was actually done in the library was completed, it was apparent that the traditional distinction in libraries between these three types of material continued to be appropriate in mechanized systems. There were significant differences, particularly between periodicals and the other two types. We are, therefore, devising a system which is composed of 4 basic parts: A master file of information about our patron (Fig. 4) and master files of information about the three primary kinds of items available to him. Of course, we have more than books, documents, and periodicals, and although the thoughts and illustrations here can be replicated for each kind of material, the other kinds normally can be forced into the pattern for one of the three represented on the slide.

You will notice we have placed the patron file in the center of this very simple diagram. I will not belabor you with the obvious reasons for the patron being in the central position in all of our efforts because they are self-evident to all of you service-oriented librarians.

You will notice that there are two levels of tapes surrounding our patron and by the way, these shapes represent magnetic tapes in the symbology of the systems analyst and the computer man. The inner group of tapes are those prepared from the masters to do jobs more efficiently, or prepared prior to entry of the data on the masters. We will look at each of them in a moment, but first let us examine what data appear in the master files.

This is a generalized representation of the patron tape record showing the identifying and descriptive data and the requirements and interest profiles of each of our customers. This file will be arranged in the order of social security number. You may recall that I mentioned that we serve several organizations at Redstone. Payroll numbers, badge numbers, and similar local identifications do not furnish us with unique identifiers; hence the need for the social security number. It is accidental in a sense that we have selected one which can also be used in any other locality.

Here we see the gross arrangement of data on the periodical master record. (Fig. 5) We have information regarding the magazine itself, the publishing and cost aspects required for reordering, the predetermined binding information, the holdings record, and the essential reciprocal of that, the list of lacks.

Here is an indication of the general format of the book master; (Fig. 6) again information about the book itself, the call number and bibliographic string, the housekeeping information, i.e., copies available and descriptive information, then the more complex data, such as the subject entries, etc.

The document master is essentially in the same format as the book master; (Fig. 7) however, since there are some specific differences in the elements of information and in some parts of the processing, it appears appropriate to keep documents separated from books at this time.

In developing ALPHA I, seven almost axiomatic principles were borne in mind. (Fig. 8) These were:

1. Machine readability shall be obtained at the earliest possible time. In general, this is done at the time of ordering or receiving.

2. Redundant transcription shall be minimized by using prepunched transaction cards, i.e., feedback shall be used to the maximum extent possible.

3. Generalizability is required to provide for possible changes in our requirements. We may grow or we may shrink. We may change emphasis - our system must change with us.

4. Open-endedness and provisions for modification are essential if we are to take advantage of the efforts of others like NASA, DDC, AEC, or any other groups - local or central - who automate their information collections. What I mean to say is that we must have active nerve endings.

5. Many types of transactions are required to maintain the master and subsidiary files. The simplest external technique is the hopper method in which all transaction cards are thrown together and the machine makes all processing decisions.

6. We will use the work of others wherever we can to avoid unnecessary expense and to speed our own efforts.

7. Each automated process must result in at least as satisfactory a manual tool as was available through manual methods in addition to a machine interrogatable file.

You may be able to see, as I show you a few more diagrams, how some of these principles - particularly the one of feedback - are used wherever possible. Let us take the book-related activities first. (Fig. 9) Now we have identified the inner group of tapes. The in-process tape is used in conjunction with each of the three master tapes - books, documents, and periodicals. The inventory tape is used for both books and documents. Let us follow this diatram for a moment or two to see how things will work. Let us assume that a patron needs a book. His request is first processed

against the inventory file (in practice to the shelf) to determine whether a copy is available. This file, in many ways, is a combination of the traditional shelf list and the traditional circulation record - it has an entry for every copy of every title. If a copy is available, it is loaned to him and the loan information is posted to this file. A suitable extraction of this file is a circulation report arranged both by call number and by borrower's name. Overdue actions can be triggered.

If the book is not available for circulation, the in-process file is interrogated to determine whether there is an uncommitted copy on order, if not, recall or reorder can be initiated. In recall, the inventory file is posted. If it is the librarian's decision to order, the order data are posted to the in-process file. Periodically, the in-process file is summarized from a financial standpoint.

The on-order list, which is a listing of the in-process file, has flags showing those actually received but not yet entered in the bibliography or inventory file. Upon receipt of a book, the flag is added to the in-process file showing that the item is awaiting cataloging. When this is completed, information is transferred, in the case of an added copy, to the inventory master or of a new title, to the bibliography master as well. Then, as part of this file maintenance process on the bibliography master, an accession list will be produced and selective dissemination accomplished on the basis of data on the patron file. Multiple sequencing of the bibliography master, of course, will result in printed lists corresponding to the traditional catalog which, like any book catalog, can be available for use in many locations. Information retrieval searches will be performed against an inverted entry tape produced from this bibliography file, using a specially developed infinite query search algorithm. In this way, with a minimum number of tapes, all of the material which we feel is required to run an effective operation is produced. This includes data which indicates the position of an item on loan and which has overdue recall built into it, catalogs to show what material is available, management information, and a positive current dissemination technique.

Now, let us examine the document related activities. (Fig. 10) You will notice that in many ways this appears to be a mirror image of what you just saw. This is as it should be for the same operations are involved for both types of material; the same functions must be performed. There are certain differences, however, in the techniques we will use. For example, our book circulation method depends partially on the flow of a card with the book which is used to discharge the book upon return, while our corresponding document circulation method will retain this card in a manual file in the library, signed as a receipt when necessary, prior to its use as a discharging mechanism. The accession record and SDI are expected to be combined operations for both books and documents in which the updating information for the bibliography master for books and the bibliography master for documents will be brought together so the user has the benefit of the maximum amount of incoming information. Financial summaries are not required for documents, but this detail is replaced by further complications in the area of security control and reproduction.

The third major area, periodical related activites (Fig. 11), is different from the other two. Here we expect the man to stay up to date in his field by perusing journals routed to him or by examining abstract lists, such as Nuclear Science Abstracts or International Aerospace Abstracts, etc. Consequently, you will see that the products we expect to obtain are lists of titles which can be made available to the patron, and what appears to be a rather simple, but what is actually a very complicated financial and housekeeping package involved in the reordering and the recording by machine of the material obtained. In this instance, like in the book and document areas, an in-process file is necessary because as one removes material, adds titles, or takes any action which changes the available number of copies of other data, the entries must not be recorded on the master record until the date the changes become effective. The routing master is conceptually similar to the inventory master used for books and documents; however, instead of a periodic circulation list, thousands of printed route slips are produced which serve both to forward copies needed by the patron and to identify on a receipt exception basis, those magazines paid for but not obtained.

I have already mentioned that the SDI and accession information from books and documents would be combined. I should have mentioned that the circulation records will also appear in a single list. There is, of course, a small amount of circulation information about periodicals which will also appear in this record despite the fact that our policy is not to lend bound journals.

You are undoubtedly wondering how much of ALPHA I is now in effect (Fig. 12), and how far along we are in the other phases. This slide gives an indication of the status two weeks ago when the notes for this talk were assembled.

Progress has been made since then.

The entire system study of the manual method is complete.

The generalized statements of the machine methods for the overall system are being put in finished form although a number of the parts are already farther along than that.

The periodical reordering activity has been operative since June.

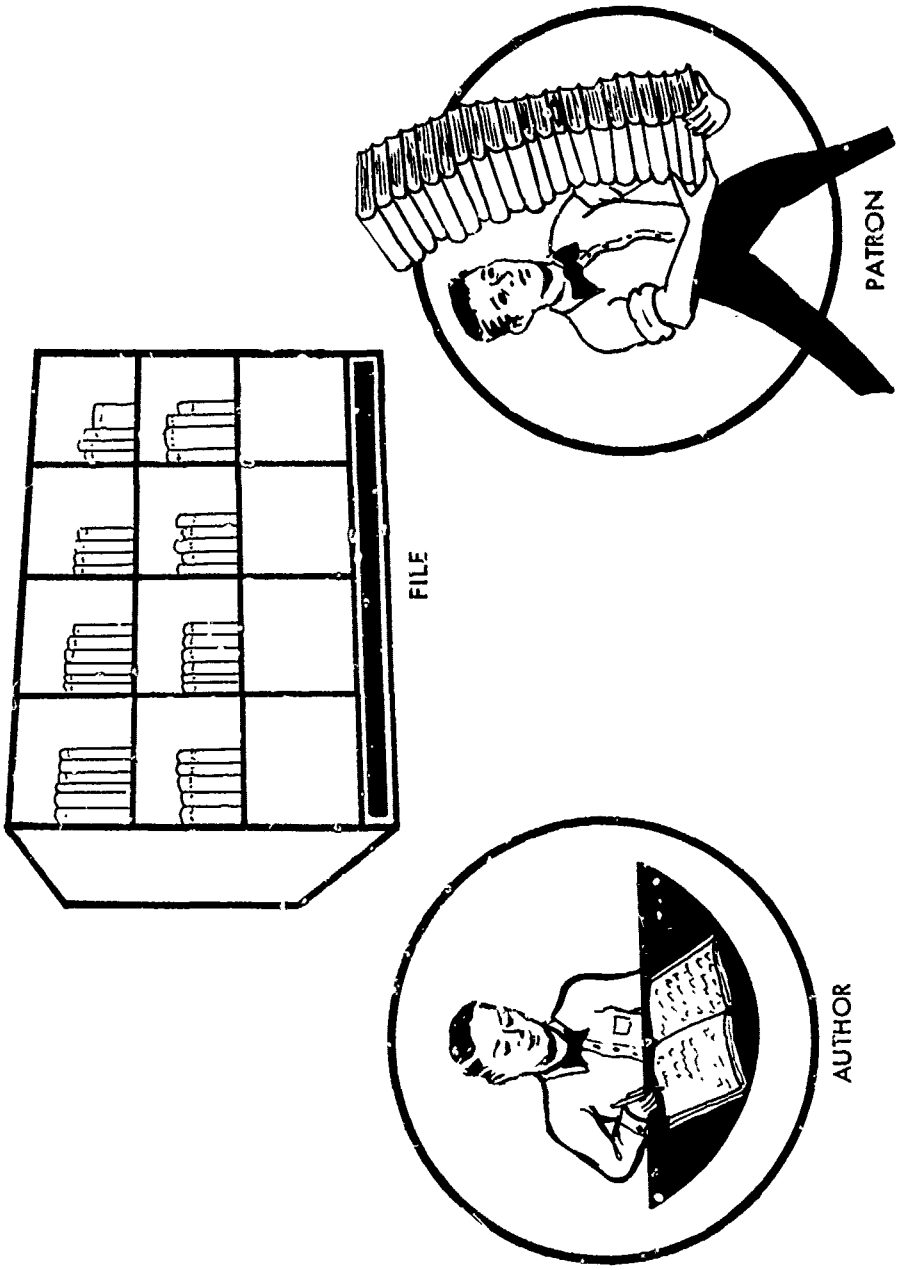
The book circulation has been in effect since May.

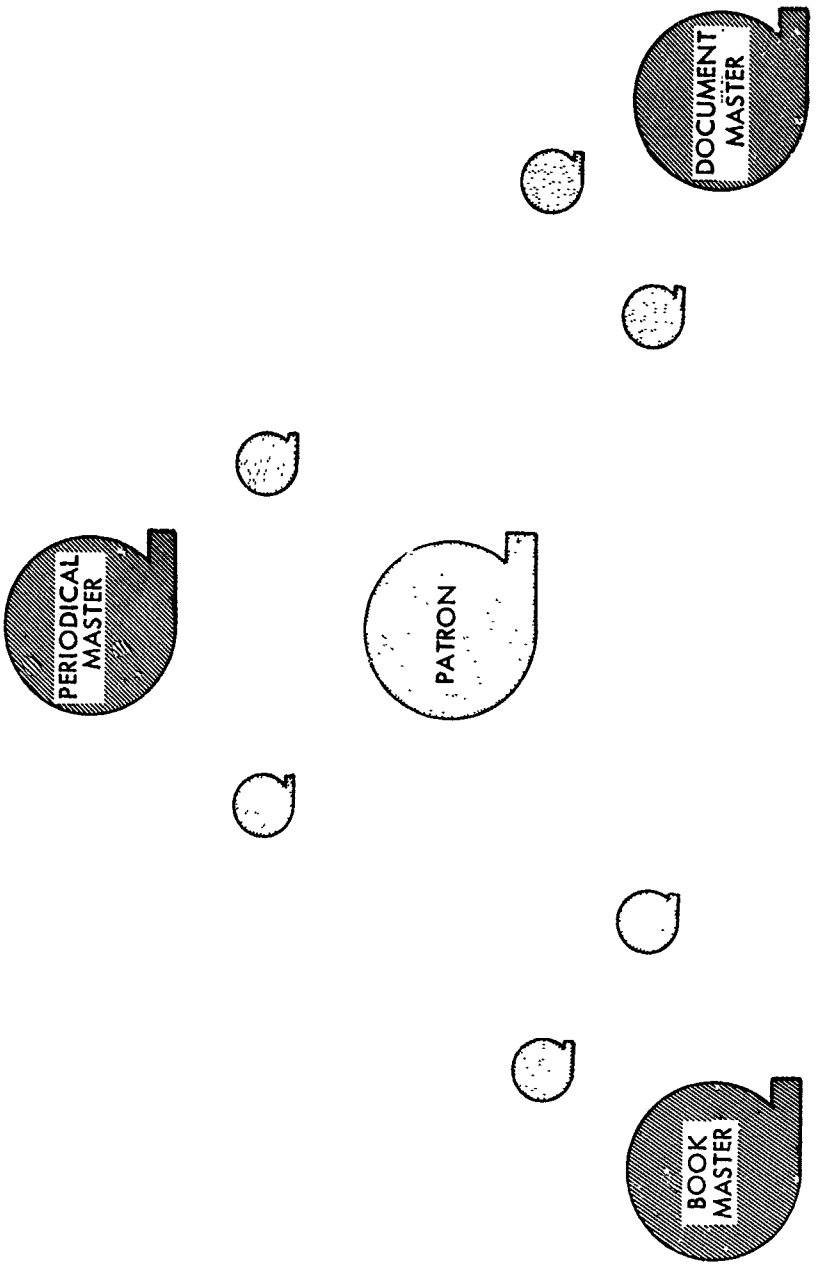
The magazine routing program is being debugged and the first trial use will occur within the next three weeks.

The binding program is being coded at this time and will go into test during November.

The book ordering and receiving operations have been turned over to programmers for detailed coding; some trial tests will be held in November.

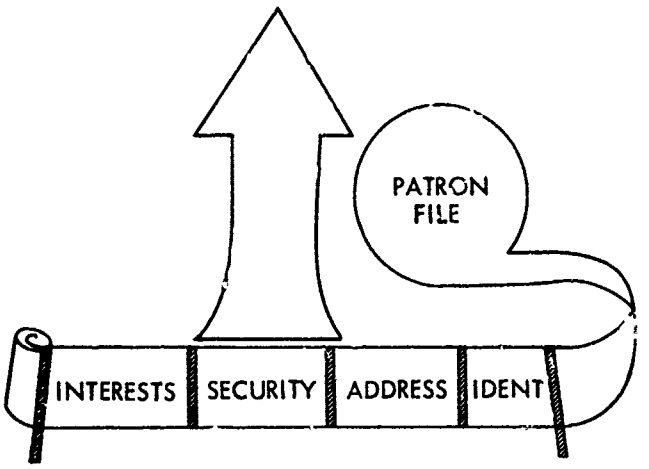
AUTOMATED LITERATURE PROCESSING HANDLING AND ANALYSIS SYSTEM -1ST GENERATION


PATRON
FILE
AUTHOR

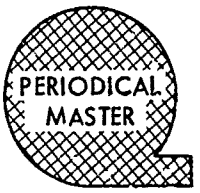

DOCUMENT MASTER
PERIODICAL MASTER
PATRON
BOOK MASTER

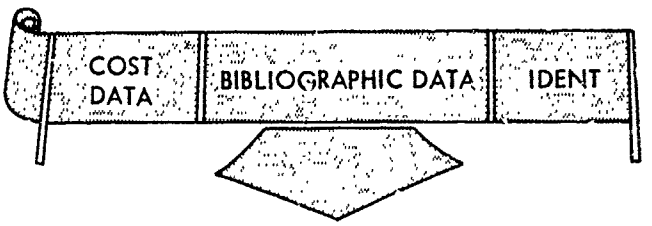
PATRON FILE

1. SOCIAL SECURITY NR.
2. NAME
3. BUILDING NR.
4. OFFICE SYMBOL
5. TELEPHONE NR.
6. PERIODICALS RECEIVED
7. "NEED TO KNOW" CODES
8. FURTHER CHARACTERIZATION
9. INTEREST DESCRIPTORS



PERIODICAL MASTER

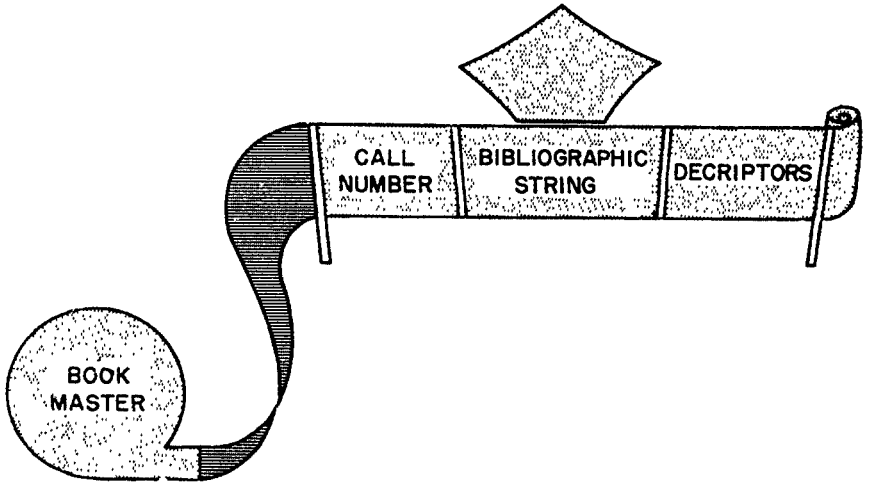




1. TITLE
2. VENDOR
3. PUBLISHER NAME & ADDRESS
4. LANGUAGE CODE
5. SUBJECT
6. FREQUENCY
7. SUBSCRIPTION DATA
    1. PRICE
    2. QUANTITY
8. BINDING DATA
    1. COLOR
    2. SIZE
    3. SPINE TITLE
    4. NOTES
    5. SCHEDULE
9. HOLDINGS
10. LACKS

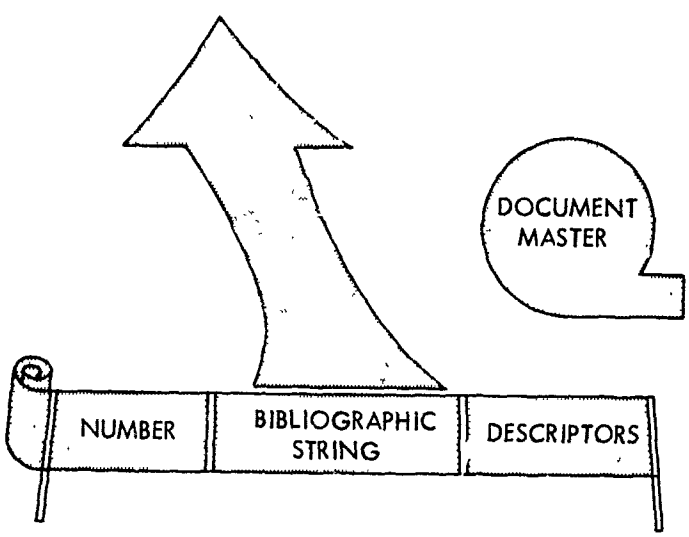
BOOK MASTER

1. CALL NUMBER
2. AUTHOR (S)
3. TITLE
4. PUBLISHER & PLACE
5. DATE OF PUBLICATION
6. NR. PAGES OR VOLUMES
7. NOTES
8. NUMBER OF COPIES
9. NORMAL SUBJECT TRACINGS
10. DESCRIPTORS



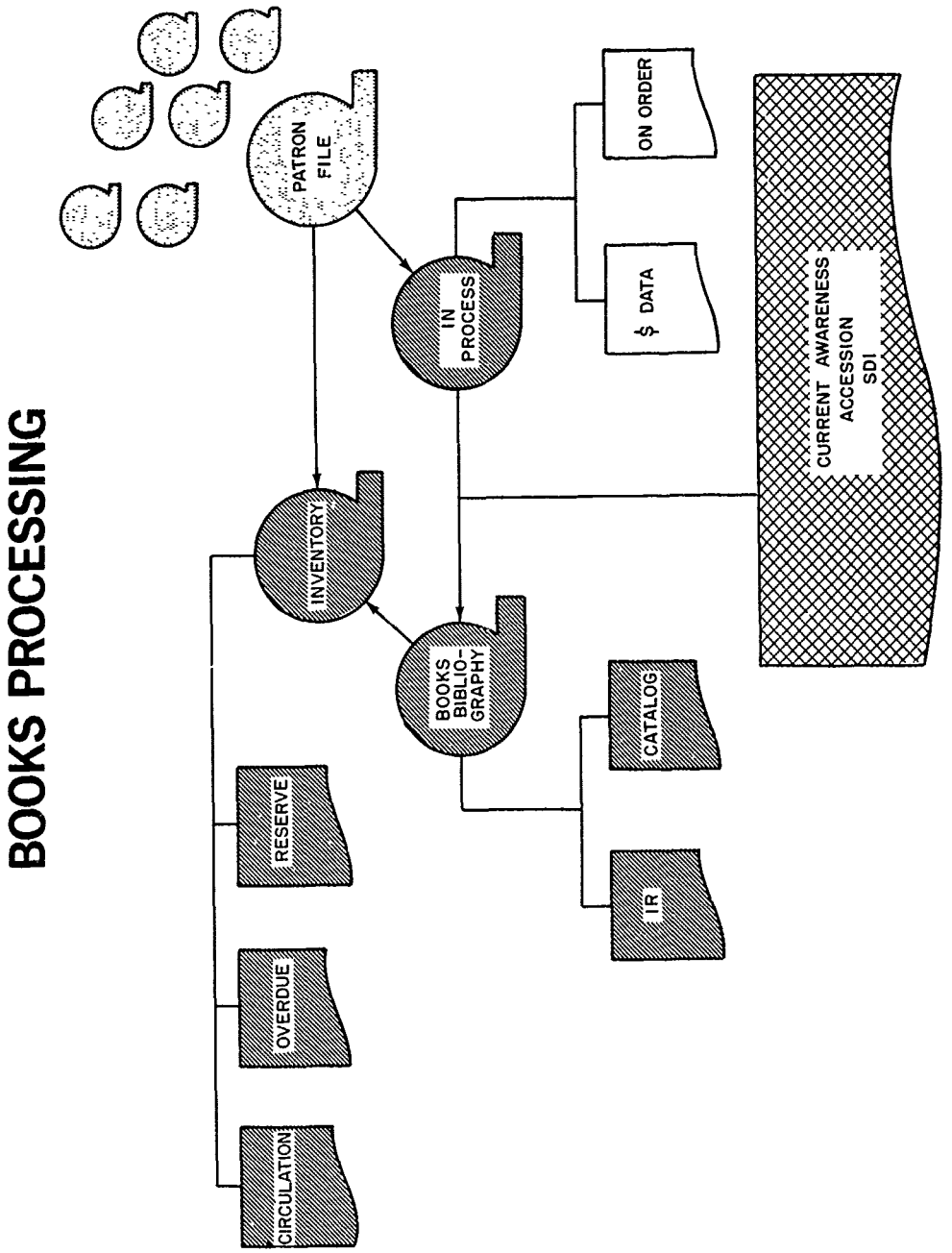
DOCUMENT MASTER

1. DOCUMENT NUMBER (INCLUDES DATE)
2. CORPORATE & PERSONAL AUTHOR (S)
3. TITLE (EXPANDABLE)
4. ISSUING AGENCY
5. NR PAGES
6. MEDIUM (MICROFILM, ROLL FILM, ETC.)
7. ACCESSION NUMBERS
8. CONTRACT NUMBER
9. RESTRICTIONS
10. TOTAL COPIES
11. USE FREQUENCY
12. DATE OF RECEIPT
13. DESCRIPTORS

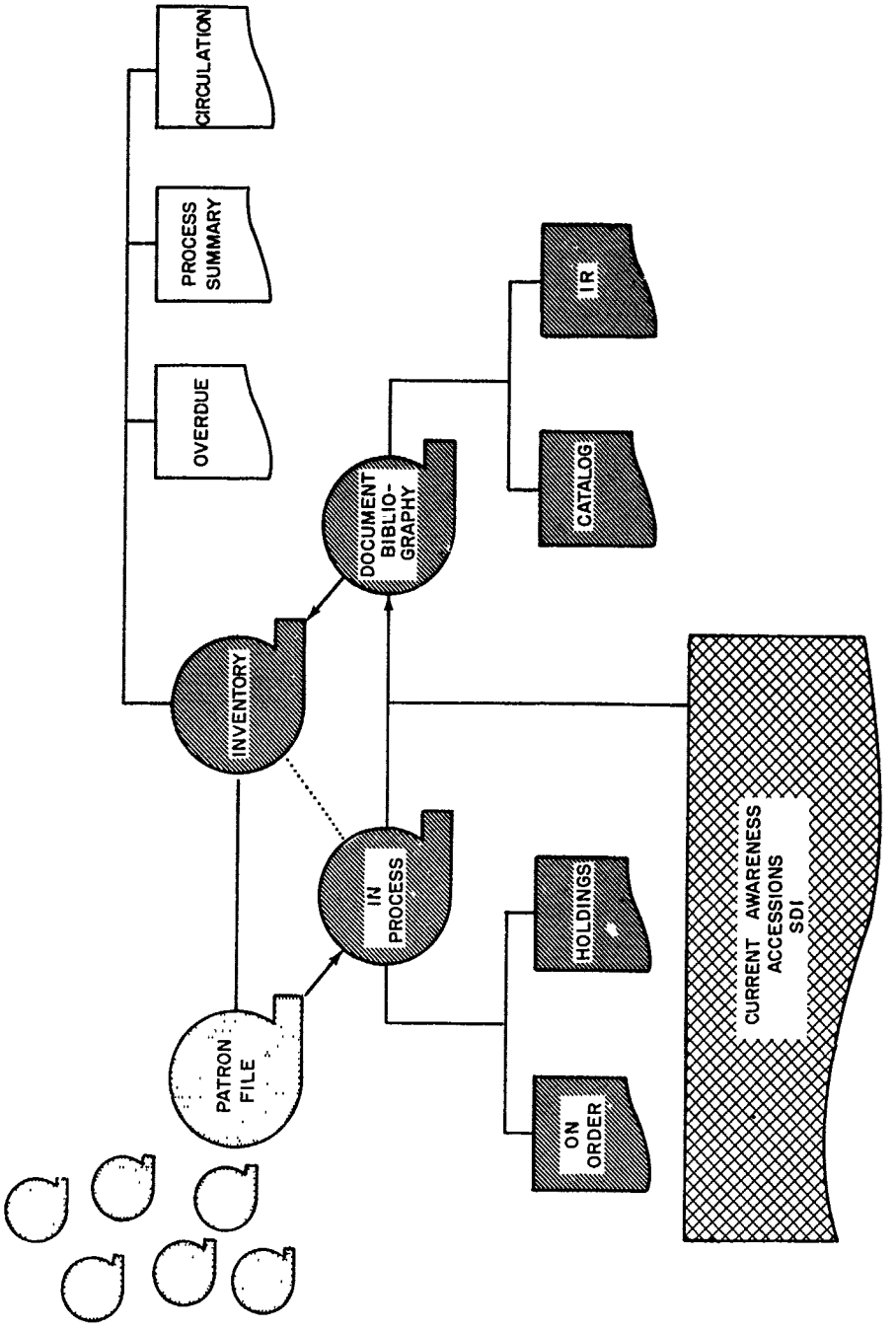


GUIDES

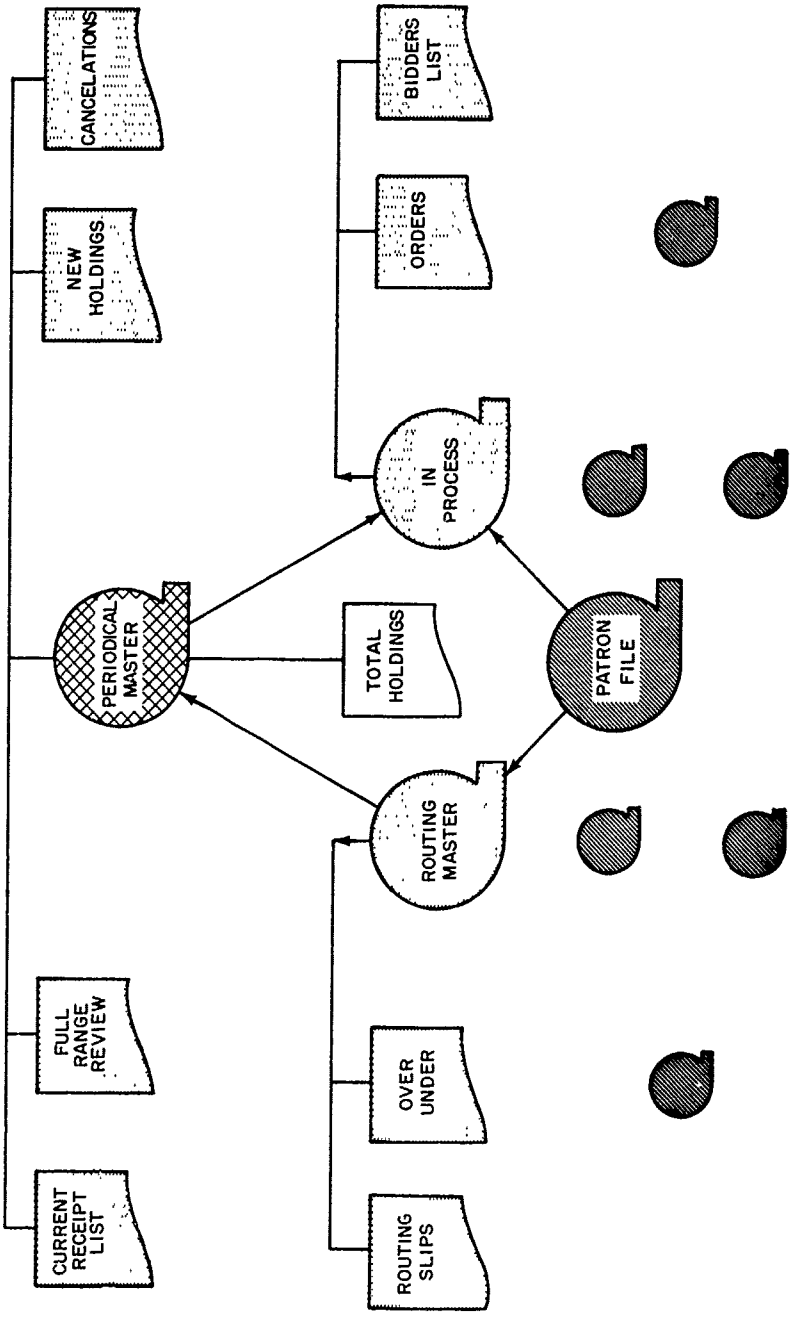
- EARLY MACHINE READING
- SINGLE WRITING
- GENERALIZABLE
- OPEN-ENDED
- HOPPER APPROACH
- USE WORK OF OTHERS
- IMPROVE MANUAL PROCESS


BOOKS PROCESSING
PATRON FILE
IN PROCESS
ON ORDER
$ DATA
CURRENT AWARENESS
ACCESSION
SDI
INVENTORY
BOOKS BIBLIO-GRAPHY
CATALOG
IR
RESERVE
OVERDUE
CIRCULATION

DOCUMENTS PROCESSING



PERIODICAL PROCESSING



STATUS SEP 63

OPERATING

BOOK CIRCULATION
PERIODICAL REORDER

PROGRAM TEST

MASTER PATRON RECORD
PERIODICAL ROUTING
BOOK ORDERING
BOOK RECEIVING

PROGRAMMING

PERIODICAL BINDING

Periodical holdings records will be added to the periodical master and summaries obtained about the first of the year.

Mechanically-produced accession lists (books only in this case) are expected late in December.

Document circulation conversion may start about the first of the year.

I have had several conversations with people from other organizations who feel that the work we are doing on ALPHA I is applicable in other library situations. I agree with them and we plan to disseminate the results of our efforts in the professional press. It seems, however, that at least in the Army, there is some feeling that parts of ALPHA I may be sufficiently well tested, documented and described to put the system in the professional literature. If any of you feel you are in this position, you can write us and we will attempt to keep you informed of our progress by means of copies of progress documents we prepare. However, I must warn you that although we are happy to share our results with you, our primary purpose at this time is to make ALPHA I the best possible system for our unique situation at Redstone Arsenal as rapidly as we can.

MR. VLANNES: It is my task to put the final, concluding words to our program for today.

I will not belabor you, as other folks have, with something that is familiar, because, as we have indicated to you, the work is not ending - it is just beginning. There is a new LASS to be put into circulation and to come into being before long.

On behalf of the Army, it has been a pleasure to be here. We wish to thank all of you for listening to us. We also wish to thank Miss Liberman for the very fine back-up that she has given to us today. We hope that what we are doing will be a kind of a light in the new Department of Defense program, specifically, it will be some of the things that will be emerging in the Army program.

MR. COWGILL: Are there any questions about the Army Technical Information Program that you would like to ask from the floor at this time?

Q: Will copies of these talks be available?

A: I believe they will be. We will try to make them available. Miss Liberman will be able to tell you at a later date in what format they will be available. The content is available, and it is a matter of reproducing them and fitting them into the total format.

Q: I would be interested in asking the last gentleman how much of the library's effort goes into the card punching and the actual processing.

A: How much goes in now, or how much will go in?

Q: How much will go in.

A: This will be on tape.

Q: Does this permit you to operate your library on a reduced staff with this activity? I assume you mean that after you get it all going, you will too.

A: We have already begun to operate on a reduced staff for reasons outside the system which we are working on.

Q: The question I have in mind is this. Is your staff - in other words, is the actual operation of all this data punching of the cards and things of that sort being done in the library as part of your library operation, or is this being done outside the library by some other activity which is not charged to your staff?

A: All of the cost of it will be charged to our staff. In the Scientific Information Center, we will do all of the work except the coding programming, in the Center, with the assistance of our direct contract people who work in-house with us. We will do all but the coding type of the programming. We will do all systems analysis. We will not operate the machines - those are done in the Computation Center itself, and the printout at present is also in the Computation Center. We will prepare all input; we will prepare everything up to the general logic diagrams.

Now, at the present time, we are using one person to work up back-up files and we have four contract people who are just finishing up the backlog on our book circulation which is putting a collection of about 70,000 items under full mechanical control for circulation only. This does not include the long bibliographic string needed for the bibliographic master. I can show you a page of the current circulation record, if you are interested in it.

May I have Slide Number 24, please? We have gone on to this mechanized process, using the circulation requirements only. This is the call number layout of our circulation record; we have bugs in our work too. You will probably find something - it doesn't appear on that record, but I think the next slide shows the patron circulation page. Slide Number 26, please. This shows you one of the bugs that we will have in our circulation system. It is a little difficult to lend anything now in 1967, but we managed it according to this record. We are currently involved in a reclassification project from Dewey to LC. I believe you will see a mixture of Dewey and LC items under the term "Article Number" which our machine people find easier to use than call numbers to identify what they are talking about. All of this is charged to the Scientific Information Activity. It is possible to total this with all the other work that we do.

Q: When you end up, would you still have card catalog and shelf list?

A: Are you talking of practice right now, or theory? We expect to, and right at this moment, we expect that we will maintain the card catalog for books. We will maintain a shelf list in card form for books for an indefinite

period. In documents, we hope to do away with our card catalog, other than a holdings record, equivalent to shelf list, which is our so-called source file as soon as we can get the material onto tape. We expect to be able to kill that document filing - the card filing problem for documents where we have something that is 24 sixty-drawer cabinets. We expect to kill that all, except for about 4 cabinets, but in our book catalog where we are dealing with a three-cabinet maximum situation, including a shelf record, we are going to keep that for awhile.

LIBRARY COMPUTER PROGRAMS

OPERATIONS AND SERVICES OF THE DEFENSE LOGISTICS STUDIES INFORMATION EXCHANGE

Madeline S. Startzman

A requirement for collecting, storing, and communicating information about logistics studies and related literature was recognized by the U. S. Army Logistics Management Center, Fort Lee, Virginia, in early 1958.

The then newly established Logistics Research and Doctrine Department of the Center needed logistics research and management information that had been or was being developed by other agencies in order to coordinate and develop the inter-related aspects of its study effort. Consequently, the Department maintained bibliographical data on all pertinent literature which came to its attention. These data were assembled and published for internal use on an intermittent basis. In a short time, other logistics study agencies learned of the bibliographical publications and requested copies for their use.

In 1959, the Deputy Chief of Staff for Logistics, Department of the Army, formally recognized the requirement for a central source of reference for logistics studies developed by the Department of the Army. Accordingly, the U. S. Army Logistics Management Center, then under the control of the Deputy Chief of Staff for Logistics, was directed to establish and operate a study reference service for all Army logistics studies. The service included the establishment and maintenance of an inventory of all studies and the publication of an annual brochure containing a synopsis of recently completed significant studies and a scope statement for studies reported to be in progress or proposed. The brochure contained an author index and a subject index.

In 1960, when the Department of Defense directed each of the military departments to establish a central information and coordination point for logistics studies, the Center was chosen to operate the activity for the Army.

Those of you who attended the 1961 Workshop at the Air Force Academy may recall Mr. Wilson, Manager of the Exchange, talking about the Army Information System. I understand he predicted at that time an expansion of the Army system to a DOD-wide basis. That expansion was accomplished in July, 1962.

The charter of the Exchange is Department of Defense Instruction 5154.19. It has been implemented by Army Regulations Number 1-12, SECNAV Instruction 4000.24, Air Force Regulations Number 400-37, and DSA Regulation Number 4100.1.

Presently, the mission of the Exchange is to collect, store, and disseminate information about logistics research and management of interest. to the Department of Defense.

In order that we may be on a common ground, let us look at the official Department of Defense definition of logistics.

The way we have charted this definition, which can be found in the Dictionary of Military Terms for Joint Usage, Joint Chiefs of Staff Publication Number 1, is the key to our information retrieval system.

LOGISTICS

Materiel

Design and Development
Acquisition
Storage
Movement
Distribution
Maintenance
Evacuation
Disposition

- MEANS -

Planning (including determination of requirements) and Implementation of:

Personnel

Movement
Evacuation
Hospitalization

Facilities

Acquisition
Construction
Maintenance
Operation
Disposition

Services

Acquisition
Furnishing

Now let us discuss the three major functions of the mission of the Exchange separately. Fortunately, the collecting process of our system presents but few problems. All agencies within the Department of Defense that are responsible for the supervision and conduct of logistics research are required to furnish the Exchange with copies of all studies and documents containing significant logistics information. We must, of cours periodically police the collection phase to insure the awareness of these requirements. Other logistics research papers and related data are identi fied and collected from any source, such as your library accession lists, particularly those of the service schools, civilian research organizations, university publications, and magazines and technical journals including commercial and those published by the various services and military departments.

Our system for maintaining the literature inventory is very simple. Most of our administrative work is accomplished manually because the Exchange has limited access to a computer. Incoming documents are checked against the card file to prevent duplication. The documents are screened by the librarian for subject coverage. Is it logistics? Does it fit into any area of logistics information as shown on the chart? Is it in any way related to any of these phases of logistcs? Actually there is a very small percentage of documents eliminated at this point because of the acquisitions policy.

Working directly from the title page of the document which the librarian marked and coded during the screening, clerical personnel prepare accessions lists and type for control purposes the multiform library cards. These cards contain those elements of descriptive cataloging which we deem important in our retrieval system.

Skilled analysts with appreciable subject background then analyze and interpret the subject content of the documents, prepare for input to the RCA 501 Computer an informative abstract which will provide the user a concise and comprehensive summary of the significant contribution found in the documents.

This RCA 501 Computer handles both alpha and numeric codes.

The input data to the machine consists of 13 different items of descriptive cataloging plus the abstract or scope statements and the subject descriptors. Source, title, date, number of pages, type of document (in house study, thesis, etc.), contractor, if applicable, etc. It has proven extremely satisfactory to be able to retrieve information and prepare special bibliographies by any one of these items or combination of items. For example, we can query the machine for bibliographic information pertaining to all studies, the status of which is "in process," or ask for all "planned" studies and receive, when needed, a print-out of all the data including the abstract. The actual document or information about "in process" and "planned" studies is filed by accession number in a regular file cabinet.

When we talk about storing information, we are talking not only about the physical storage of the document, but we are also talking about storing on magnetic tape complete bibliographic information about all logistics literature introduced into our collection. As said before, we can retrieve by any element of a citation. However, the subject descriptors are really the key to our information retrieval system. We have the capability of retrieving complete bibliographic information and a print-out of this with the abstract by simply querying the machine for subject information through descriptor questions alone.

In July, 1962, when the Exchange was established, the USALMC replaced its IBM RAMAC 305 with an RCA 501 Computer. So the system and programming developed for the IBM 305 had to be converted to the RCA 501. At the same time, we had another problem - to combine nomenclature, formerly Army oriented, to that which would adequately describe the many facets and functions of logistics and at the same time be acceptable terminology for use by all Department of Defense agencies. In other words, how should the many aspects of logistics be expressed so that there would be a good probability of their matching the words that potential users would choose when using the bibliography or requesting information by subject?

Using the definition of logistics as approved by the Joint Chiefs of Staff, our information is organized into eight major categories, these being: Facilities, Management, Materiel, Operations, Organizations, Personnel, Resources, and Services. These eight major areas are the first descriptors and we call them the facets. As you know, these alone would be too unselective to be of much value to anyone. Stored data needs to be more specifically identified. There is need for a narrower focus and a higher degree of pertinence which is achieved in our system by assigning five depths of identification.

The second depth term is classified as a functional or relating subject descriptor. It describes the function that is performed in respect to the major area or its relation thereto. Thus, some of the second depth descriptors for the major area of MATERIEL are terms such as design and development, acquisition, storage, movement, and maintenance.

The third depth descriptor identifies the subject or the application involved. In the major area of MATERIEL, these descriptors are terms such as vehicles, communications equipment, ammunition, and the like.

The fourth and fifth depths are the generic term and the identifier. Thus, specific bibliographic information dealing with NIKE ZEUS missiles maintenance, a phase of operation "Swift Strike," or Capehart housing construction can be identified for retrieval.

These different depths of subject indexing, using related descriptors ranging from the general to the specific, enable us to rapidly "zero in" for a direct hit or, if desired, we can include information in the general subject area.

At the present time, we are using up to three sets of these five related descriptors, for in logistics, as in any other field, many times a document contains sufficient pertinent information on more than one facet of a major subject area which would be lost if it were not brought out with additional subject descriptors. Our system allows for expansion to more than the three sets if it would be deemed necessary.

In fact, the entire system of IR by computer is very flexible. It is open ended - it allows for the daily addition of new material and the revision of stored data as necessary - it will accommodate alterations or additions to the coding system, it will accommodate additions of new subject descriptors or changes to those already in use so that we can cope with lexicographical shifts, for the views of our expected users - the practicing professionals, logisticians, and the operating personnel of the military establishments determine the "meaning" of every word in the retrieval system.

The Exchange communicates information through the compilation and distribution of periodic bibliographies. An annual bibliography is published on 1 January; quarterly supplements are published on 1 April, 1 July, and 1 October. Special subject bibliographies are retrieved upon request and distributed as required. The Exchange provides bibliographic information. It is neither a requisitioning nor a lending source.

By this time some of you may be feeling as I did when I went to buy a car. I encountered a very enthusiastic salesman who explained in great detail about the improved carburetors, compression ratios, torques, and all sorts of things. Finally I had a chance to ask my only question - "Does it work?"

Perhaps you are asking that same question about the Exchange, and my answer is - "The system does work." Demosthenes said, "The easiest thing of all is to deceive oneself; for what a man wishes, he generally believes to be true." When the second supplement to the 1963 annual bibliography was distributed, a questionnaire was included. Now that we have received answers, it is no longer a case of believing to be true that which we wish. The answers to the questionnaires show that 93% of our

users learned of useful studies which were previously unknown to them. 55% recall having requisitioned 1,230 copies of studies during the period from March to August of this year and records indicate 95% of these studies were received.

It is impossible to state in dollar terms how much money or effort has been saved, but specific instances are known where the timely decision resulted in the determination that contracts about to be let were unnecessary. These two contracts would have cost us over one and a half million dollars.

Now I would like to discuss some thoughts and plans for the future. We have accumulated this past year the necessary raw material for a thesaurus of subject descriptors. We hope to convene an Ad Hoc Committee to develop this thesaurus prior to 1 July 1964.

If and when we get sufficient computer time, we shall dispense with many manual operations - we shall eliminate the catalog cards - we can store the titles of documents alphabetically and query the machine before introducing new acquisitions into the collection. This would, of course, eliminate the initial clerical handling of incoming documents and the typing of accession lists. We want to establish a master file of subject descriptors which will be used to compare input information for accuracy prior to its introduction into the system. In fact, when we get more computer time, any library routines which are repetitive, unlikely to change internally, will be done by the computer, for the machine will do it faster and more accurately.

Synthesis or correlation of information is probably the biggest problem facing information retrieval systems. As you have gathered from this discussion, our system of related and weighted descriptors provides a degree of synthesis, but this is limited to the resources available to us. Our thought in this area is that we must have analysts sufficiently trained in the functional areas of logistics before we can do an acceptable job. Our goal is to do this by the time of the next Workshop.

We know from the answers to the questionnaires that many military librarians are using the bibliography to locate logistics information.

May I thank you now for the time and effort you spent in formulating these answers and for your constructive suggestions for improving the bibliography? If there is anyone here who is not on our distribution list and would like to be, please let us know. The Defense Logistics Studies Information Exchange was established for your use and benefit, and we shall welcome an opportunity to be of service to you.

DISCUSSION

Q: I wondered what coordination you have been able to effect with the Defense Documentation Center on your proposed thesaurus.

A: We have talked about it to them. Mr. Wilson, the Manager, has been up there. I think we will probably go to them after we have our Ad Hoc Committee and work up on our own something that is most applicable to our particular discipline, and then coordinate with them. In our bibliography, whenever it is known, we show the A. D. number so that people can requisition the documents from DDC because the Exchange is neither a lending agency nor does it have copies to answer your requests. We group the studies under the source, under the agency responsible for them, and you write to them. But, we will coordinate with DDC because they have done so much work in this area.

Q: It would be nice to have one thesaurus that both of you could use.

A: I think we will have to go into it in a little more depth perhaps than they do.

Q: Yes, I would agree.

A: We will have to have probably a larger one.

Q: I am intrigued with the analysts you have. I was interested in the qualification of the analyst and the kind of analyst you have, and also, what luck you have in getting him.

A: I will tell you this - we have eight people in this operation. The Manager is also doing the work of an analyst for the Army studies. We have one for the Navy, and one who does the Air Force studies.

Q: But these are by Service.

A: They are by Service, and each of them has had a very good background in logistics in the Service. We have one more space allotted to us. It is on paper, because that would be an Army analyst to relieve Mr. Wilson to really do some of the other work instead of carrying water on both shoulders. He needs to do some of the other work. That, I will say, is on paper. When it was added, there were no funds, so we could not hire anyone. I think there will be a little push on now - this Fall. Frankly, I think it is because of the economy wave. The slot will have to be filled, or it will not be there.

Q: I understand that is more or less common.

A: I don't think that is a new story to anyone.

Q: You said that storage is by accession number rather than by, let's say, classification. By classification, I mean, using it broadly, by source and so forth. It is just strictly by accession number? Is it physical storage?

A: Yes. The physical storage of the documents is by accession number.

Q: Strictly numerical?

A: Strictly numerical.

Q: Did I understand you to say there were eight analysts?

A: No. Eight people in the Exchange. That includes the three analysts, the combined one of who is the Manager, the librarian, two secretaries, one file clerk, one slot which is the key punch operator. But that represents the combined time of the Computer Division which they allot to us. We have this one slot which is called the key punch.

Q: Are the analysts officers?

A: No. They are civilians. They were officers.

Q: I would like to know how many reports Mrs. Startzman could handle per week, month, year.

A: We are handling about 3,000.

Q: Three thousand a year?

A: There is no way in the world we can say how many Logistics documents are in existence. We are till trying to collect them, and no one can tell us, nor can we find out, how many are in existence or how many there will be. It is just a figure of 2,500 or 3,000. It comes right out of the air just like that - no basis in fact.

THE UNITED STATES NAVAL POSTGRADUATE SCHOOL SABIRS PROGRAM

UTILIZING THE CDC 1604 AND THE IBM 1401

by

Professor George R. Luckett
U. S. Naval Postgraduate School
Monterey, California

In describing the Information Storage and Retrieval System of our Library at the United States Naval Postgraduate School which our programmer has named SABIRS (Semi-Automatic Bibliographic Information Retrieval System) I must first define basically the limits of my discussion which, perforce, must be within the limits of my knowledge. Since I am a librarian and not a programmer nor a computer specialist, my comments will be limited to historical and descriptive accounts of the system from the point of view of a librarian. Since I am primarily interested

in what the system will do for our library users and not, basically at least, in how it does it, programmers, computer operators and mathematicians will gain nothing from this presentation. I trust, however, that if those present are not interested in what we are doing, they will be interested in the various administrative and decision problems that we have faced and, we hope, solved. We believe that the lessons we have learned and, because our involvement was without much benefit from others' experience, the scars that we bear, might prove of some value to those who are now beginning their wending way into and, perhaps, through this jungle.

Historically, our problem dates back to 1947, the date our Library (but not our School, which is much older) was established. We began, at that time, with a small but orthodox collection of books and journals. Through a contract operation (and everyone knows that to solve a problem one lets a contract) our Library was established. The contractor, bless her heart, was a wonderful little "public library type" who had never heard of a technical report. Consequently, our library was organized to match the college and university type of the early thirties: it had books and periodicals but no money and no people. Only after it was set up, did the School employ a librarian. He also was a "public library type" but he was also, in contrast, a smart one. He convinced the administration that classified materials had no place in libraries and he succeeded in having such materials placed in the hands of a mustang lieutenant. This officer proceeded to amass a sizable collection, which except for a log-record and shelving by date of receipt, was completely unorganized and almost unapproachable. All that one had to know to obtain a classified report was the date on which the School had received it.

Meanwhile, the Librarian, hoped against hope that these nasty little things called research documents would go away if he didn't admit their presence officially. Consequently, he, like the previously mentioned officer, was gradually amassing an unclassified collection matching and exceeding in size the classified one. I say unclassified meaning, "in the security sense" because, as any one could see these were either scientific or technical and, therefore, belonged in the 500's or 600's (yes, Audrey, we were unhappily saddled with the Dewey Decimal System). They were, therefore, stuffed into Princeton files and pamphlet boxes and placed (in with the books) at the beginning of the 500's and the 600's. It was almost the simplest of all system -- one didn't bother about the author, corporate or individual, about the specific subjects, about the contract or, actually, about anything else. After about three years, however, (in 1950) our hero had learned something. He had discovered that these things wouldn't go away, that patrons had a nasty way of requesting them -- even classified ones, too! - that the fifteen stack sections filled with boxes which were, in turn, filled with reports would have to be absorbed and made available. At this point he decided on a logical action. He resigned.

In that year, I was offered the appointment as Librarian and since it was a raise, I accepted. After several months of survey work I presented the

School administration with a report that called for a three-fold increase in the staff of the Library so that we could bring order out of chaos. I was granted two additional billets. (Since this was only a one-third increase, I began to wonder if a fly-speck had made a decimal out of the ordinal number in my report). Suffice to say, that along with the two billets came a directive transferring the classified collection to the Library "because no one can find anything and the Library staff is trained to be able to do so."

That was in 1953. Four years later, we had, with a minor increase in staff, organized the entire collection so that we could find something when we knew what we were looking for. At this point we began subject analysis and because, as we were told, "Coordinate Indexing is ideally suited to mechanization," we established that system in our reports collection.

It did not take long before we realized that mechanization was a must -- that it could not be a "hope for the future" but must come now.

With some begging and some arguing, we finally were able to have one of our graduate students assigned the project for his thesis research. His program was written, his theory developed, and his SABIRS became fact. But, he was not concerned with librarianship. He was directed to provide a means of storing coded data, retrievable on demand. He was given a series of criteria by the librarians also assigned to the project. These were:

1. Size of the file to be covered
2. Rate of growth of the file and system
3. Range of inquiries to be serviced, or the purposes to be served.
4. Range of subject matter to be covered.
5. Kinds of concepts to be represented.
6. Specificity and type of analysis.
7. A specified limit on the personnel required to do the analysis.
8. The availability of funds that could be allocated to processing information and conducting searches.
9. A statement of desired reliability of results, or probability of retrieval.
10. A general idea of what we hoped to accomplish.

Additionally he was told that storage and retrieval must consider several categories of information, which were:

(a) The Corporate Author(s)

(b) The various descriptors that portrayed the subject content

(c) Date control consisting of "not later than," "between this date and that" and "not earlier than"

Statistically determined on the basis of reader demand, the above three approaches were deemed sufficient. Our experience showed that the number of inquiries received in which the personal authors or the titles were the known facts was so small as to be insignificant.

Similarly, the "descriptors" listed in our glossary were determined on the basis of consideration of supply and demand. Starting with existing uniterm glossaries, we edited out those terms not currently and never likely to relate to curricula at our School. In addition, we added to this list, those descriptors which we knew, by experience, were used as approaches to report materials in our collections. Terms such as particular models of equipment, airplanes, etc., will be found in our glossary whereas, those relating to botany, medicine, etc., were eliminated. We did not concern ourselves with "aspects" or with "false drops caused by the interchangeability of nouns and modifiers" and the resulting errors in retrieval. As you know, this has been exemplified many times by the statement: "without aspect control, you may request material on 'Venetian blinds' and get, along with the desired material, reports and data on 'blind Venetians'." To date, I might facetiously add, we have never had a single request for either "Venetian blinds" or "blind Venetians." We have, in fact, viewed "false drops" not as the detriments they might be in a research laboratory but, since we are an educational institution, as opportunities for serendipity. Our plan was, as can be seen, to serve our public with our holdings. We looked to ASTIA (now DDC) for reports we didn't own and even for the designation of owned reports by subject approaches we hadn't used if ever we should add a curricular subject. With such assistance readily available we believed that we could effectively meet any reasonable demand that could be made. You see, in an educational institution, unlike a research laboratory, curricula and courses are not added overnight. They are developed over a period of time and, if the Librarian participates in such discussions, he will have, as he must have, time to develop his library collections to meet the anticipated faculty and student demands.

So much for the history leading to the establishment of SABIRS. We now come to a review of what it does and how well it does it.

First, of all, while we hoped for success we did not let go of the life line. Concurrently we have maintained, the posting of our coordinate index cards. This is currently being handled by an auxiliary computer program.

Second, we began SABIRS as of November, 1961 and we did not add any material retroactively.

Third, we have, as of this date incorporated approximately 11,000 reports into SABIRS.

Fourth, we decided to be satisfied for a while with coded, or accession number print-out. By this, we mean that, in response to an inquiry the requestor received a list of document numbers with which he may then review, using a shelf-list in accession number sequence, cards bearing descriptive and abstracted data. Since he is, at the same time, informed of the security classification he can browse in the unclassified report section or specifically request those that are classified.

Fifth, Reader approach is specific but does allow for gray area retrieval. For example, since disjunction of descriptors is not a part of the system, the requestor submits several requests, broadening them as he goes, by dropping descriptors or by interchanging them; for example -

If the inquirer wants reports on equatorial or polar satellite navigation using Doppler methods he uses these uniterms to ask the search question:

(1) Satellite, navigation, polar, Doppler

(2) Satellite, navigation, equatorial, Doppler

(3) Satellite, navigation, Doppler

Also, since he might expect to find something specific in more general reports, he asks also for

(4) Satellite navigation

(5) Doppler navigation

While the above, undoubtedly, in a research laboratory would provide an unusable mass of reports, such is not the case in an institution where education and broadening of knowledge is much more important than specifics. The inquirer, if he so desires, may further limit his search by specifying a particular source or sources, and as indicated earlier, he may restrict the output to include date of publication limits: earlier than, later than or between this date and that. The first limit permits a smaller output when the inquirer knows that the desired data was authored by certain selected corporate bodies; the second reduces the output when the inquirer's request may be date oriented (e. g. he knows that the desired data appeared within the past year or during the Summer of 1962 or was released earlier than last November because that was when he saw a copy). In each of the above instances, he can also enter a second inquiry at the same time without those limits. (This would be in answer to a question such as: "I think it was a G. E. report" or "I think it came out last Summer".) The print out, which appears as two answers, gives him a brief bibliographic report to scan first and if the requested data does not appear thereon, he can broaden his examination of documents to those beyond his "guess".

The specification of the inquiry is only slightly limited in the number of possible sources, and the number of descriptors. The latter is limited to twelve descriptors, the total of descriptors, sources and date may not exceed fifteen.

The input of data to the system and its retrival from the system is unified: that is, up to 64 inquiries may be made and on the same run, up to 5,000 new records may be added and 1,000 may be deleted. In this way, we keep our file of records up-to-date at all times by adding, deleting and searching on a daily basis. Should urgency require, special additional inquiry runs are made during which there are neither additions nor deletions.

Our experience has taught us many things. One is, that our users are highly pleased with the service; even though we have only slightly over 11,000 records in the system, we run on the average of between four and five searches daily. The second is that, being an educational institution we can anticipate. By this, I mean, that since we are informed in many instances of the subject matter to be covered in courses, we can pre-run inquiries actually before they are received. We formulate the various expected inquiries and use the space available within the 64 question spaces. We then store the print-out for several weeks and, lo, when the inquirer arrives: "instant bibliographic service." Similarly, we use these empty inquiry spaces to post our descriptor records which, in reality, are nothing more than anticipated reference inquiries. The third is that, since our students and faculty are predominantly engineers or scientists they have more confidence in the computer output than they do in a bibliographic literature search by a librarian, who is not a specialist in their particular field. Somehow, the fact escapes them that the computer puts out only what is put in and what is put in may have been the result of the work of the same nonspecialist librarian/analyst. I believe that they are not really afraid that we might miss something, but that we might purposely pass over something as irrelevant when <u>they</u> would consider it pertinent.

Fourth, we have learned the importance of administrative understanding and concurrence in our projects. We must not, ever, be put in the position where the Library use of the computer might be considered secondary to other uses and be, thereby, eased out in the computer-time assignment. This story, which is true, illustrates my point.

A long time ago, when I was but five years old, I arrived home for lunch well after the appointed hour only to learn that my father had gone to search for me and was, at that moment, cutting a switch from the hickory tree in the back yard. My grandmother, an understanding woman, to say the least, opened the bookcase and handed me a thin but substantial book. (I remember, to this day, that it was a child's version of <u>Don Quixote</u>).

"Put this in the seat of your pants," she instructed me.

The result was that I received my punishment and, following her further instructions, cried ceremoniously.

The lesson, however, was not learned and the next day, with no fear in my heart, I came in late again. Seeing my father again cutting a switch, I knew what to do. I ran to the bookcase, but, alas! It was locked. Needless to say, I learned my lesson --"Come home when you are told to come home." I was further instructed, visually, when, following the whipping, my father reached into his pocket and extracted from it, the key to the bookcase. This lesson which falls in the category of "keep your powder dry" has a further implication when applied to librarianship and information retrieval. I revere it almost as if it were holy law.

"Whenever mechanical equipment is placed between the book and its user, possession of the key is of paramount importance."

Fifth, we have learned the importance of determining the value of the services the computer makes possible before we make them generally known. The provision of borderline services or data conceivably might prevent the accomplishment of more valuable ones. If Professor Parkinson were to consider this problem, he might add another Parkinson's Law stating:

"When useless services, statistics, or data are provided, knuckleheads will appear in similar quantity to demand their continuation."

Sixth, we, having chosen automation, even in this limited sense are not completely sure that our choice was the correct one. It is something like participating in a Floristan toothpaste test. The choice may result, even though one doesn't know it at the time, in bringing a toothy smile to your face several years later or it may result only in more holes in your head. It might even be expressed, if I may make a pun, as "Cavity emptor'

Finally, no paper can be ended without a look into the clouded crystal ball of the future. Here is what we see -

(a) A program has been written and tested which will provide readable, rather than coded print-out. Instead of accession number output, we will obtain a descriptive bibliography with a not to exceed 600 character abstract for each item. This will be placed into operation within the next three months. This was anticipated at the start but we did not want to delay operation while waiting for this improvement. Because of the anticipation, however, we have retained all paper tapes used in Flexowriter catalog card preparation. These will be used to assemble the bibliographic mag-tape file without further work. This program will also read in future tapes, look up the descriptor in our mag-tape glossary and enter the descriptor coded data as well as the abstract in our storage file. Searching the storage file will still result in accession numbers but the process will continue to match these numbers with the bibliographic data - the print-out being English language copy identical with that in our card catalog.

(b) We are compiling profile data for our faculty, but we are not requesting their cooperation. Faculties, being what they are, have much broader interests than have research specialists. With cooperation.

our profiles would be similar, at least, to the two-faced Janus, but probably most would appear to be Hydra-headed. Our profile data, therefore, is being compiled from questions actually asked. In this way we know that our data will describe the needs of the person rather than his broad interpretation of his interests.

(c) The more distant future shows ultimately a cable-connected console in the Library inter-locked with the main computer on a delay-time basis. With the console will be a display tube and a small Xerox-type printer. The inquirer's questions, in descriptor terminology will be placed in the system immediately upon receipt. Card pictures will appear on the display tube and can be scanned by the inquirer who reviews them at his own selected reading speed. When he encounters a pertinent bibliographic and abstracted reference of particular interest to him, a simple push of a button will result in a Xerox paper copy that he can retain.

Here, then, is our system. Past, present, and future. We like what we have done and we look with interest toward the future. But, please, do not think of us as mechanically minded or even machine devotees. As my male staff members often say, "We could do all that we are doing now, and a great deal more if the Navy had provided a supply of good-looking gal librarians instead of a computer." However, " they continue "having both would improve the situation immeasurably." As one says, "the computer would generate the additional spare time that I would then need."

DISCUSSION

Q: George, has the program increased cost of library operation - you know - equipment, personnel wise, and so on?

A: Actually, we have added no one to the library staff to do this because we are doing all of this beforehand. All the analysis was being done at the same time. The actual entry of the material into the system is one on the paper tape from the Flexowriter which we did before the preparation of the catalog cards, so that all we have had to do was to establish the program and use already existing documentary material to put it into the system.

Q: How about the equipment? Do you rent or own the equipment?

A: The School - that is, the Computer Center - owns part and they rent part. Of course, I am not taking that into consideration. They have dropped that anyway. According to statistics over the past, I think it is about six months, we have used one tenth of one per cent of computer time, so it is a very small drain on the system.

Q: Do you plan to go back and pick up your back collection?

A: Yes, but only after weeding. At this particular point when you are suddenly faced with a tremendous mass of material that you have never

even looked at, it would be silly to start a group of people analyzing and putting it into the system. Most of it is probably dead. Incidentally, to answer your question, they are all pre-numbered, so all we have to do is add a one in front of it to bring it up into a system as advanced as ours - anything we want to key.

Q: Are your codes alphabetical or numerical?

A: The codes are numerical - octal.

Q: I am interested in that sixty-four questions at once that you run. I was told I could only run nine or ten. They are not on the ball down there, are they?

A: I don't know. Ours answers sixty-four at a time. In fact, the print-out is rather interesting in that, first of all, it will give the name of the person who asks the question and the number of his particular question. If he asks ten, there will be, for instance, Luckett 1, Luckett 2, Luckett 3, and there will be a list of material answering each of these questions.

Q: I don't know that this will get you any more people necessarily, but it would seem to me that you are educating your users to be acquainted with a service that they may find in some of their subsequent assignments ashore, and perhaps be more sympathetic to the requests by libraries for separate services.

A: I think you are right in this. Our big battle in the past has been confronting those Flag Officers who take a look at the library and (should I say this?) say, "Look where I got without a library."

Q: There is one very good answer to that. You say, "Yes, Sir, you did, but unfortunately we don't have other Flag Officers like you in the Fleet."

A: I am thankful for that.

AN AUTOMATED CIRCULATION PROGRAM AT A GOVERNMENT R&D INSTALLATION

by

I. Haznedari
Chief, Reference and Circulation
and
H. Voos
Chief, Technical Processing
Technical Information Center
Picatinny Arsenal, Dover, New Jersey

Picatinny Arsenal's Technical Information Section shares in the Big Problem of technical libraries everywhere - too much business, too little help. Its collection of 29,000 boods, over 900 current periodical

titles, and 135,000 technical reports is used by more than 1500 scientists and engineers. In a typical recent year our 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.

Our circulation problem is further complicated by two special factors: (a) for security reasons, the movement and location of a large part of the library's holdings must be strictly controlled, and (b) the people who use the library are widely dispersed throughout a 7000-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 our 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 chargeout cards.

Meanwhile, shortages of both physical space and manpower became more and more acute. Finally, it became clear that a complete break with our 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 which encourage the use of business machines: high frequency and repetition of operation.

GENERAL DESCRIPTION OF SYSTEM

In April 1962, therefore, 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 the cards on low cost 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 used on the computer to record this chargeout or reserve data as a master list on magnetic tape. Entries are made in the first 63 columns according to coding on Fig 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 loaned materials that have been returned, converting reserves to loans as the materials reserved become available, and adding new entries for all newly loaned materials.

BORROWING PROCEDURE

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

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 any other identifying information he may have (Fig 2A).

Cards received by mail are checked (See STEP 1 in the flow-chart) 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, etc. (Fig 2B). Figure 3 shows the Circulation Flow Chart.

Once the library requisition cards have call or accession numbers on them, they are sent to the keypunch operator who punches the following entries:

Date of transaction
Type of document
Library number (call or accession)
Borrower's name
Borrower's payroll number

and sorts the cards by

Library number
Type of document
Security classification (which is part of the accession number)*

*For security reasons, material having different classification is 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 on the shelf, 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 makes the following entries:

Transaction code
Copy number of 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 out, and the second is put aside for sorting.

For over-the-desk requests (which account for only 10% 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 chargeout) in the card and duplicates it. As with all chargeouts, 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 requestor's payroll number, and the status of the document (outstanding, reserve, etc.) 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 (Fig 3).

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 number, payroll number and date (Fig 4A).

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 (Fig 4B), which we consider 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 (Fig 5) for library users informs them of which library items they are charged with. It also informs the library user of classified library items in his possession. This information serves to remind him to periodically check on, the safeguarding of such documents.

As a byproduct 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 which 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 thousand
Printed circulation cards	1.05 per thousand (not including setup and plate charges)

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

About 10 rolls of masking tape are also used per 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 (avg)		318.87
709 cost (avg)		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 hours 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 (2 minutes per item), it actually represents a substantial saving when the number of annual transaction is considered. Future refinements in the program, such as less frequent computer runs, automatic preparation of reserve cards, etc. may make greater economies of time possible.

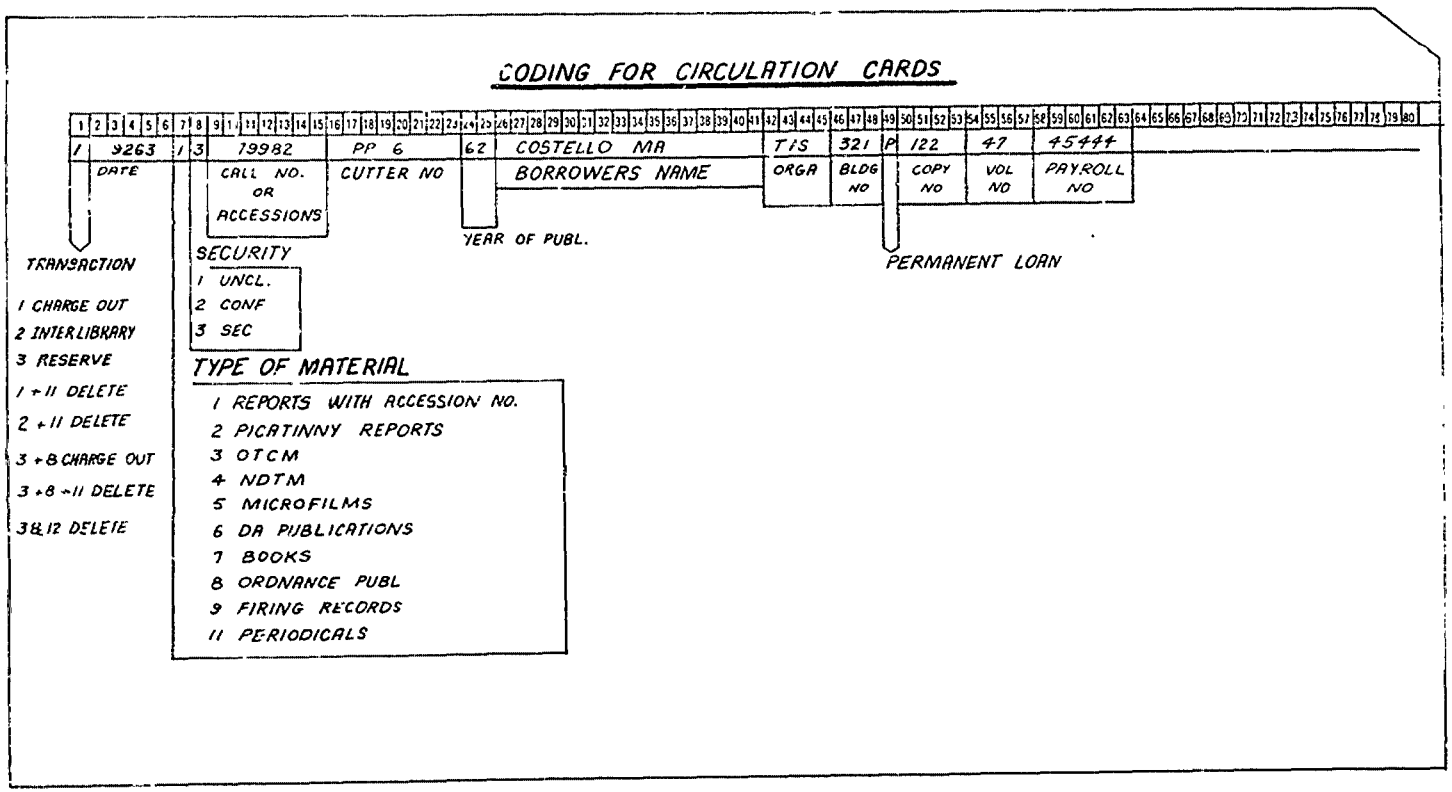
With the computer-based system, the circulation function can be accomplished with two less library personnel.

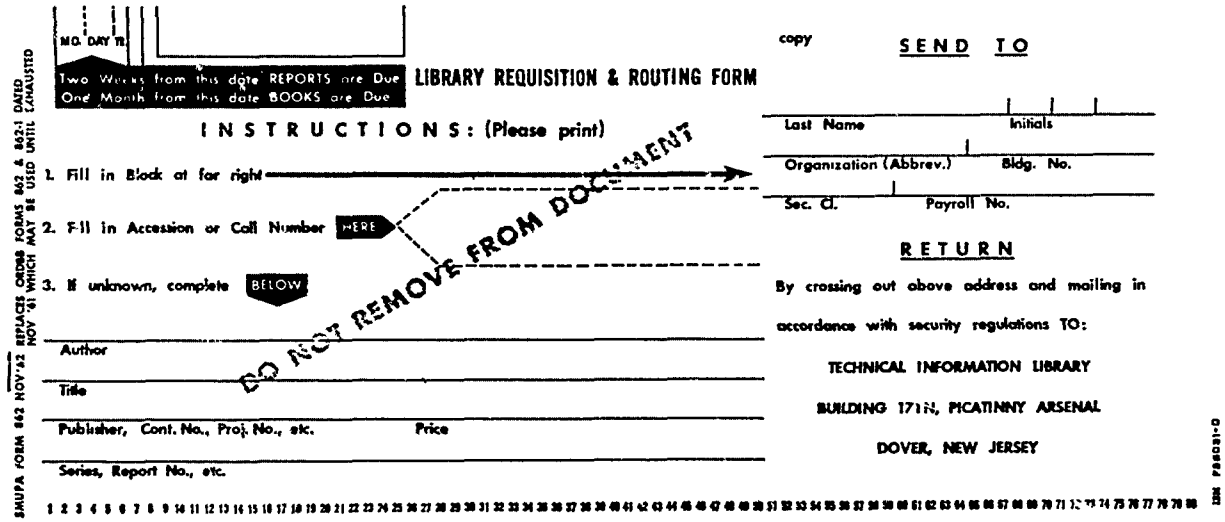
The automated overdue system is five times as efficient as the manual system. Moreover, it provides statistical data, which the manual system does not, on the rate of return of documents and the average number of people waiting for them.

FUTURE PLANS

Circulation, of course, is only one part of the entire information handling process. We have plans underway to automate other phases of our library operation. We intend, for example, to place our entire shelf list on tape, thereby providing benefits broader than those of information retrieval alone. The matching of reserves by number of requests against this shelf list tape will supply more meaningful requisition information. The statistical data now available on the use of our 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 and 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 computer in pre-sorted order. Our periodical records could also be fed into an automated system.


CODING FOR CIRCULATION CARDS
1 9263 1 3 79982 PP 6 62 COSTELLO MA TIS 321 P 122 47 45444
DATE
CALL NO. OR ACCESSIONS
CUTTER NO
BORROWERS NAME
ORGA
BLDG NO
COPY NO
VOL NO
PAY.ROLL NO
TRANSACTION
1 CHARGE OUT
2 INTERLIBRARY
3 RESERVE
1 + 11 DELETE
2 + 11 DELETE
3 + 8 CHARGE OUT
3 + 8 + 11 DELETE
3 & 12 DELETE
SECURITY
1 UNCL.
2 CONF
3 SEC
YEAR OF PUBL.
PERMANENT LOAN
TYPE OF MATERIAL
1 REPORTS WITH ACCESSION NO.
2 PICATINNY REPORTS
3 OTCM
4 NDTM
5 MICROFILMS
6 DA PUBLICATIONS
7 BOOKS
8 ORDNANCE PUBL
9 FIRING RECORDS
11 PERIODICALS



FOR LIBRARY USE ONLY

VERIFIED IN _____

SEARCHED IN (PLACE X)

RPTS. CAT._____ BOOK CAT._____

PER. LIB._____ PROCESS FILE_____

UNFILED CARDS_____

☐ OUT OF PRINT

_____COPIES ON HAND

_____COPIES TO ORDER

_____CALL OR ACCESSION NO.

SUPPLIER

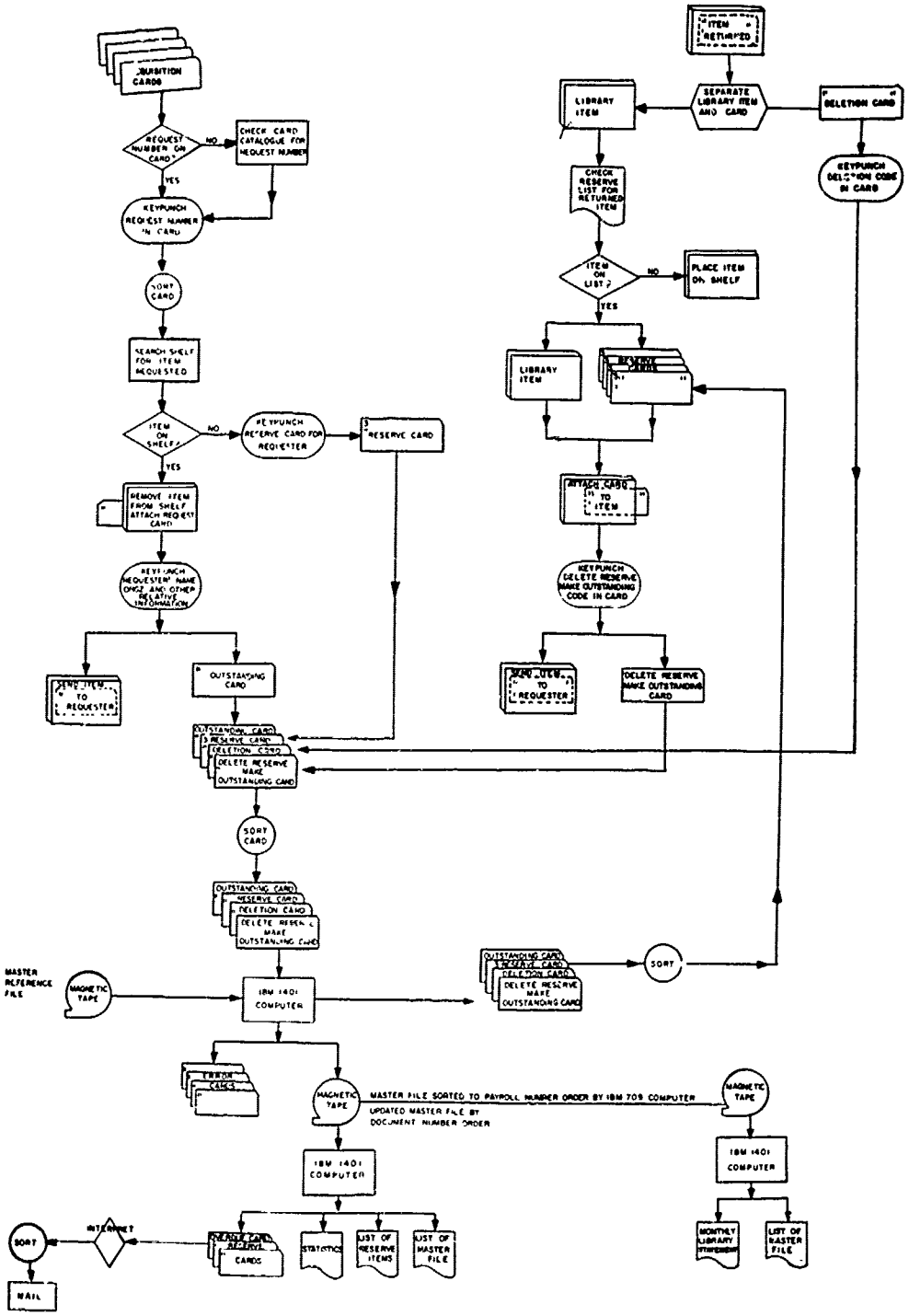
☐ SOLE SOURCE ☐ IMPREST FUND ☐ TELEPHONE

☐ WOULD APPRECIATE RECEIVING ☐ COST AND AVAILABILITY ☐ TELETYPE

☐ PHOTOCOPY ☐ REPRINT ☐ LOCALE

ORD BB 862 REV (VERSO)

CIRCULATION CHART



• DATE 08/16/63

MASTER LISTING
IN PAYROLL NUMBER ORDER

CLASS	ACCOUNT NO.	CUTTER NO.	VOL	COPY	CODE	BORROWER NAME	PAYROLL	ORGN	BLDG	CLEAR	DATE
1 2	99381	SR 2			1	VOIGT HW	4996	ESL	350		7/17/63
1 2	99344	62		1	1	VOIGT HW	4996	ESL	350		8/ 5/63
1 2	99692			5	1	VOIGT HW	4996	ESL	350		8/ 5/63
1 2	99803			10	1	VOIGT HW	4996	ESL	350		8/ 5/63
1 2	99979	FINL		44	1	VOIGT HW	4996	ESL	350		8/ 5/63
7 1	PE1628.0	W466		197	1	VOIGT H	4996	EP	409		1/ 4/63
7 1	RA1213.0	B 7			1	VOIGT H	4996	ESL	350		3/29/63
7 1	R 356.0	M 4 41			1	VOIGT WH	4996	EP	409		7/ 2/62
7 1	TA 455.0	P 58 8		1	*	VOIGT WH	4996	EP	5162		8/ 9/62
7 1	TP 270.0	C 66		29	1	VOIGT W	4996	EP	409		2/26/63
7 1	TP 968.0	S 4		2	1	VOIGT HW	4996	EP	409		9/20/62
7 1	UG 447.0	G 7 56			1	VOIGT H	4996	ESL	350		3/29/63
8 1	P20 177	BROP		25	*	VOIGT H	4996	EP	409		1/31/63
1 1	94788	KN 6732			1	MORGEN M	5658	TAWL	65		9/ 6/62
1 2	9100			1	1	MURRAY EJ	5789	WSP	355		7/31/63
1 2	49183			5	1	MURRAY EJ	5789	WSP	355		7/31/63
1 3	66312			2	1	MURRAY EJ	5789	WSP	355		7/31/63
1 1	98194				3	MURRAY EJ	5789	WSP	355		4/24/63
7 1	HD 69.0	P 75 7			3	MURRAY EJ	5789	WSP	61		7/ 8/63
7 1	U 240.0	A 6			3	MURRAY EJ	5789	WSP	61		6/11/63

• DATE 08/06/63

MASTER LISTING
IN DOCUMENT NUMBER ORDER

CLASS	ACCOUNT NO.	CUTTER NO.	VOL	COPY	CODE	BORROWER NAME	PAYROLL	ORGN	BLDG	CLEAR	DATE
1 1	95433				1	STANFIELD A	55564	QAD	3408		9/24/63
1 2	95437			29	*	WEINGARTEN G	13998	PYRB	1510		2/26/63
1 2	95437				3	PICARD J	50723	EP	5162		1/17/63
1 2	95437				3	LENCHITZ C	51485	EP	404		1/15/63
1 2	95437				3	VOGEL JJ	60488	APME	350		1/ 9/63
1 2	95437				3	KILEY RT	KILEY	EP	N162		7/17/63
1 2	95437	NUMB 3			3	CARIGNAN Y	58257	EP	N162		3/11/63
1 2	95437	OCT 1262			3	SATRIANA D	56657	EP	N162		3/13/63
1 2	95437	QPR 3			3	PELL LW	45345	EP	N162		4/ 3/63
1 2	95437	QPR 3			3	METTON RG	45434	EP	N162		5/22/63
1 2	95437	QPR 3			3	MASUELLI F	54128	EP	N162		3/13/63
1 2	95437	QPR 3			3	HULL FB	59487	SRPL	3359		4/16/63
1 1	95439			2	1	GNAPP J	53813	PP	183		10/ 4/62
1 1	95439			1	1	DAVIS J	54277	PP	183		9/26/62
1 1	95445				1	KLINKOV J	59962	AARD	351		10/ 8/62
1 1	95446				1	WASSERMAN S	56469	SRPL	3359		10/ 1/62
1 1	95448				1	BRADFORD RG	56694	ESL	266		10/ 8/62
1 1	95449			2	*	GNAPP J	53813	PP	183		10/24/62
1 1	95449			1	1	CUNNOLLY R	57716	ESL	350		10/ 4/62
1 2	95456				3	COLITTI B	50482	SRPL	3359		7/17/63
1 2	95456			41	*	COWAN G	COWAN	MUCB	171		7/ 3/63

```
          * * * * * * * * * * * * * * * * * * * * *
          *  CRAGLE D            PAYRØLL  49858    *
SEND TØ   *    EP                                   *
          *  BLDG S162                              *
          * * * * * * * * * * * * * * * * * * * * *
```

A RECØRD ØF LIBRARY ITEM(S) CURRENTLY IN YØUR PØSSESSIØN. (APRIL 1,1962 TØ 11/09/62)

TYPE	NUMBER			COPY	VØL	SECURITY CLASS.	DATE
REPØRT	78613	FEB	62			CØNFIDENTIAL	7/16/62
REPØRT	82252	ANNL	11			CØNFIDENTIAL	9/14/62
REPØRT	84654					CØNFIDENTIAL	7/27/62
REPØRT	89270						6/27/62
REPØRT	89781	QPR	2			CØNFIDENTIAL	7/27/62
REPØRT	90023						8/22/62
REPØRT	90238	NUMB	3				7/ 5/62
REPØRT	90484	MTG	20		2	CØNFIDENTIAL	9/10/62
REPØRT	90845	QS	2			CØNFIDENTIAL	6/13/62
REPØRT	90922						7/ 5/62
REPØRT	91389			D15			9/25/62
REPØRT	92406					CØNFIDENTIAL	10/29/62
REPØRT	92467			6		CØNFIDENTIAL	11/ 5/62
REPØRT	93339	JAN	362	2		CØNFIDENTIAL	10/ 1/62
REPØRT	94941						10/29/62
REPØRT	95248						9/21/62
REPØRT	95276						9/21/62
REPØRT	93981	MTG	18	2	1	CØNFIDENTIAL	11/ 5/62
BØØK	QC 1730	R	4				11/ 2/62
BØØK	QC 1741	B	6	2			10/11/62
BØØK	QC 1741	D	8				10/11/62
BØØK	QC 1741	M	36	2			10/11/62
BØØK	QC 1741	P	5	2			10/ 2/62
BØØK	QC 1745	K	3	3			10/11/62

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.

Now that we have had some experience in using automatic equipment, we are confident that the rewards to be gained by the application of such equipment to library problems are virtually limitless.

CONCLUSION

The circulation system described in this paper represents the approach that we at Picatinny have taken to the question 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 which 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.

NWL LIBRARY INFORMATION RETRIEVAL SYSTEM FOR TECHNICAL REPORTS WITH COMPUTER PROGRAMS

by

Marian Craig
U. S. Naval Weapons Laboratory
Dahlgren, Virginia

The big objective for going into machine storage and retrieval of information at the Naval Weapons Laboratory was to increase the amount and depth of information available from incoming documents-particularly in the areas of weapons systems and other specific fields of interest to NWL as represented by changing task assignments. Certain broad requirements were set up before the start of this Library system in March 1962:

1. As mentioned above, only incoming technical reports were to be cataloged and put into the system.

2. The capability to produce for technical personnel upon request a print-out or bibliography of current technical reports in the subject area requested and peripheral areas as well, resulting from the assignment of general and specific subject headings (descriptors).

3. To phase out gradually from subject areas in the card catalog (eliminating much card filing).

4. The system must produce byproducts of accession bulletins and the catalog cards needed for auxiliary files, i.e. shelf list, source, author and series cards.

Long before actually starting the system, we had decided after investigation to use the descriptors and codes already developed at NOL, and to try to maintain compatibility of codes insofar as the requirements (reflected in the collections) of the two Navy Laboratories would permit. We had also hoped to utilize cooperatively the indexing of each activity. This we have not been able to work out, except for NOL and NWL reports, which have code sheets in the back along with catalog cards. In certain subject areas like CBR, electronics, electromagnetics, NWL has assigned descriptors in greater detail than NOL. By the same token, NWL would not have the same need to utilize NOL's breakdown of terms in undersea and anti-submarine warfare. Laboratory personnel have asked the library to differentate in terminology like rocket engines (for liquid propellants) and rocket motors (for solid propellants). We have also had to use some terms in mathematics not used at NOL.

There was already within NWL a division known as the Missile Safety Center where a branch of the Technical Library is located. They had undertaken in 1959 an Information Retrieval System for documents concerning safety aspects of surface and air launched missiles and conventional weapons. They had devised a satisfactory method for indexing and retrieving this information from punched cards. These were to be converted later to tape. They never were, since there was not a sufficient need for handling the information at the time. The Missile Safety code was a numerical one with a limited number of descriptors in their subject areas. Since the beginning of 1963, the central Technical Library and the branch Missile Safety Library have been merging the two systems, and as of now all documents are entered using the Technical Library dictionary of codes and descriptors. Two people from this division work closely with Documents personnel of the Technical Library in assigning descriptors to reports filed in their division. Library Documents personnel assign codes for missile safety reports on which descriptors have been assigned.

Ten thousand reports have been indexed for the computer. The library has a collection of 52,000 reports - so roughly 20% of the collection is indexed in the computer. Obviously we depend on the card catalog index to the old collection - i.e., for reports catalogued before March 1962 and on the auxiliary records for computer indexed material; source, author, series and of course the accession file (Shelf List). Over 600 reports are cataloged each month and approximately 8,000 are added annually. A document Flow chart has been distributed. This describes briefly how reports are processed until worksheets leave the library and the information is transferred to punch cards.

It takes 35 minutes for the whole process of cataloging and indexing a document. Cost of cataloging a report, exclusive of computer costs, is approximately $1.80 Approximately one half hour a week computer time is used by the library at $390 an hour. It takes 5-6 minutes to run a search (this may include up to 100 questions) and the same amount of time to update the master file and produce the accession bulletin.

Key to the input operation is the worksheet (sample you'll see on the viewgraph) which includes the whole cataloging operation, descriptive and subject. This information with the exception of descriptors is transferred to punch cards outside the library. Once each week library master file is updated and punch cards are transferred to magnetic tape. To make changes or deletions (weeding documents or changing codes) a new worksheet is prepared giving only accession number and codes to be added or changed. A document removed from the library would list only the accession number and delete in the proper column.

The Library Accession Bulletin (samples of which have been distributed) is produced from the new entries to the master file. This is also cut up to provide source, author, series and shelf list records for the regular catalog files the library maintains. The accession list is the basis for most document requests.

Average number of descriptors assigned a report is 10 or more. There are 35 spaces for descriptors on the worksheet. Laboratory personnel have requested that the library follow certain prescribed rules in indexing various subject areas; e.g. specific and generic descriptors are always assigned in certain defined areas like chemical, biological warfare, electronics and electronic components, missiles and ships. Personnel also notify us if subject areas have been overlooked in reports. This has occurred with fuze information and certain specific kinds of shipboard tests. We know that one segment of the Laboratory wants all MARK numbers of fuzes encoded, where any of this information exists. Because of MARK and mod numbers in Navy designations for ordnance components, and in order to avoid false drops for nomenclature we are preparing a list of components having MARK numbers and a distinguishing letter or number will follow the MARK and mod number (a 5th character added to the 4 character code linking it to the fuze in the examples just mentioned, or booster, detonator, cartridge etc.) as the case may be. The Documents Librarian, Cathryn Lyon, has prepared certain guide lines of special interest in NWL for catalogers to follow, and these become part of our procedures. Our own NWL reports receive special treatment as to numbering, as do conference papers which are included in symposia.

As of 31 August, 6072 terms were in use. These include 926 equipment and radar numbers, mark and modification, aircraft and

other weapons identifying numbers. The remaining 5146 terms include subject descriptors, agency names and identifiers like missile names and projects. Subject descriptors are added at the rate of 40 per 1000 documents. The subject authority list with scope notes and definitions is arranged alphabetically by descriptor. This is basically the same list as NOL's except that the NWL list includes everything, numbers, identifiers as well as subject terms. A dictionary of codes with discriptors in use is published quarterly incorporating new codes. This list is alphabetically by code and is reproduced for distribution within the laboratory.

Source codes (i.e. agency names) are being added now at a rapid rate for special requirements of the Missile Safety Staff. This source code (it is not designated on the cover sheet of the library accession bulletin since this is a change made after the cover sheet format was drawn) is used by the Missile Safety people in an abbreviated print-out which they prefer to the rather voluminous one you have in hand.

The search program is very important. We average 20 or more bibliographic computer searches per month resulting in 100 or more questions. The library has been asked for over-all literature searches and general bibliographies as well as very specific answers to reference questions ever since the start of the system. Literature and bibliographic requests have included such topics as BW, CW detection, dissemination, logistics, munitions, target damage analysis, radiation damage in solids, munitions carried in aircraft and attendant hardware.

Normally one search will include several questions. Since there is a limited number of documents indexed for the computer, there is more chance of finding information if the search is broken into several combinations of codes rather than into one question containing 5 or 6 codes in which all the terms would have to appear in one report.

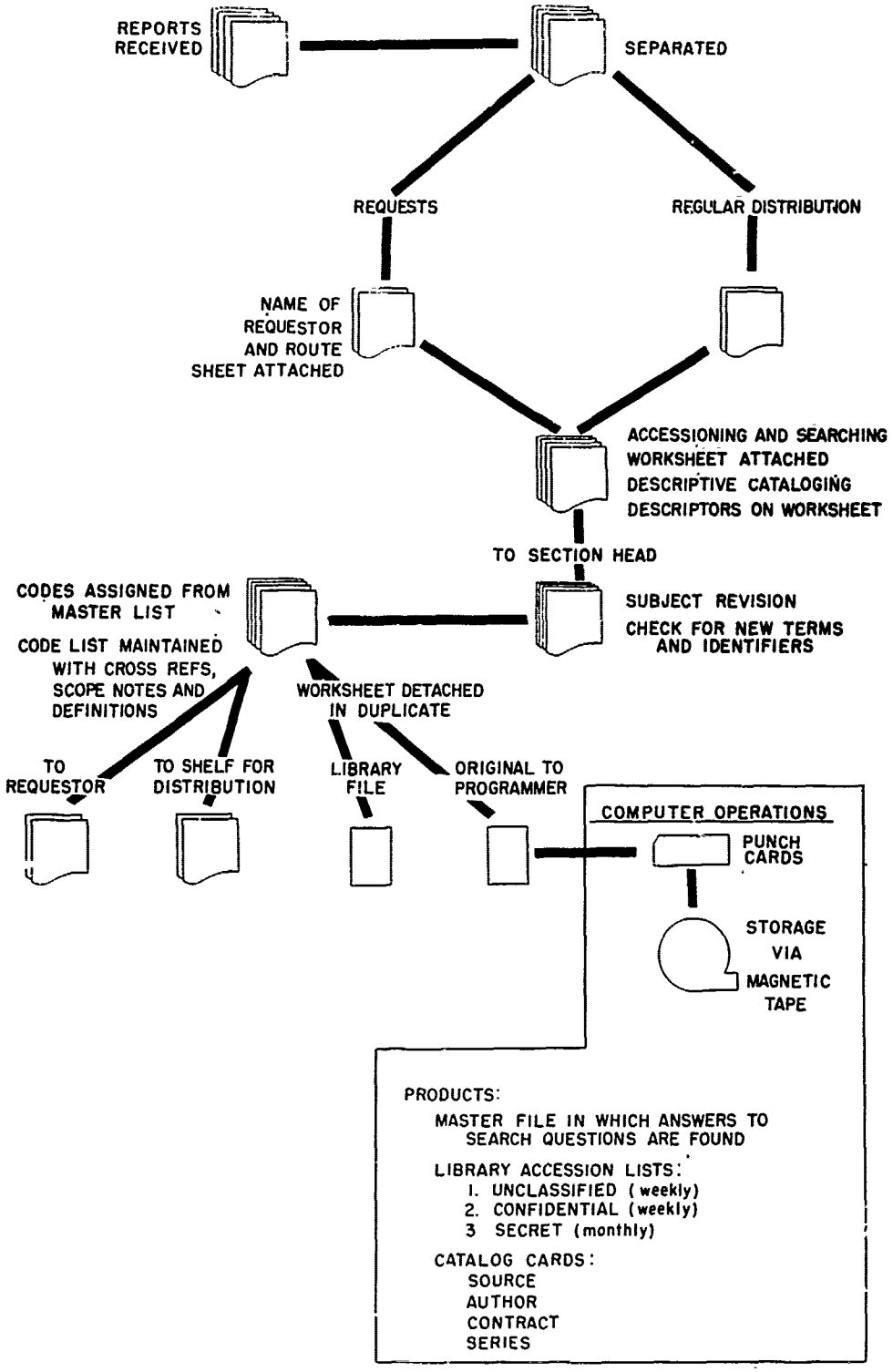
A search on anti-crop warfare yielded 56 reports from four questions on BW, CW anti-crop and the designations of two anti-crop agents. A search on numerical weather prediction included questions on meteorological satellites and rockets, nuclear fall-out, BW & CW dissemination and diffusion and static electricity. Specific searches include such requests as radar designations and equipment, weapon components, fuzes and bombs. One engineer wanted to know if there were any classified reports on eight aircraft types. There were 12.

Searches are submitted from the library on 5 x 8 sheets containing combinations of codes, usually 1-4 questions consisting of 2 and 3 code combinations. This information is transferred to punch cards by the programmer and the answer is in the same format as the print-outs of the library accession bulletins.

DOCUMENT FLOW CHART

TECHNICAL LIBRARY

U.S. NAVAL WEAPONS LABORATORY



As to the evaluation of the system, reaction has been favorable. It is much easier and faster to do a search than previously in the card catalog. Indexing is much more detailed and the library has the capacity to assign subject headings (descriptors) in whatever depth is needed by laboratory personnel. Our library serves a widely scattered geographical area. Our present cramped quarters and crowded situation preclude any intensive use of the card catalog by our customers. Computer searches resulting in the printed formats enable the scientists to take the results of a library search back to his office and decide what he needs to use. Descriptors are reviewed for usage. Provision is made in the computer to list descriptors and extent of usage. Some descriptors have been combined at the request of laboratory personnel. It is planned to incorporate the contract file to a mechanized listing. We are working now on a study to determine accuracy, usefulness and content of information retrieved from the system. We also need to do more orientation talks to laboratory personnel.

There are no plans at present for contracting the older material, or incorporating it into the mechanized system - mainly because present workload and requirements for keeping current do not permit working with the older collection, which is accessible in the conventional card catalog.

We're now going to show you what's involved in processing the data prepared in the library for the computer.

NWL LIBRARY INFORMATION RETRIEVAL SYSTEM FOR TECHNICAL REPORTS WITH COMPUTER PROGRAMS

by

Jeanette Martin
U. S. Naval Weapons Laboratory
Dahlgren, Virginia

The Information Retrieval System in operation at the Naval Weapons Laboratory involves several computer programs. (See Figure 1)

First of all there is the File Establishment/Maintenance Program which produces and keeps up-to-date the master file on which search questions are run. In updating, the program can perform three types of operations on the data being processed. It can:

a. Add new records to the file,
b. Make changes in records which are already in the file, including deletion of descriptor codes,
c. Delete entire records from the file.

In addition to maintaining the file, the program contains a subroutine which can produce the Accession Bulletin from the new entries as a by-product of the updating. At present we are running this program on a weekly production basis.

We also have a Print program which can list the entire master file in a variety of formats, ordered either by the Library Accession Number or alphabetically by source.

The Search itself constitutes another program, and with it goes a program to print the output from a search in one of two formats. We have found it necessary to have this diversification in formats because of the differing needs of the Technical Library and the Missile Safety Branch.

The initial phase in processing the data prepared in the library is the conversion of the information contained on the worksheets into some form usable by the computer. This is done by punching the data from the worksheet into punch cards and subsequently transcribing the data from punch cards onto magnetic tape. (See Figure 2)

To give you an idea of what kind of information we are dealing with, let me briefly run through the items contained on the worksheet. These items are probably fairly standard for most of your libraries.

1. Library Accession Number -- this number is unique for each worksheet. It identifies the document and is also used to order the file.

2. Source Abbreviation -- this item was not contained on the original version of the worksheet but was added later at the request of Missile Safety.

3. Report Number

4. Source

5. Title

6. Author

7. Date of Publication

8. Classification

9. Number of copies

10. Routing

11. Miscellaneous Data

12. Auxiliary Number

13. Contract Number

14. Descriptor Codes - these codes describe the contents of the document and are the key to the whole retrieval system.

(See Figure 3)

Certain ground rules were set up when the system was being formulated as to what information is essential in order to add a record to the file, i.e., what is the minimum amount of information about a document which must be entered on a worksheet in order for that information to be put into the file?

It was decided that

a. Source
b. Title
c. Classification
d. Descriptor Codes

are all necessary items, and without at least this much, the information is not sufficient to constitute a valid entry to the file. (See Figure 4)

Refer to Figure 5 for a sample of a worksheet as it appeared after the preliminary cataloging and indexing were completed and the descriptor codes had been assigned. Figure 6 shows the same data as it appeared after being punched into punch cards; and Figure 7 shows the same data as it appeared in an Accession Bulletin which was produced as a by-product of the update which added the data to the master file.

The Information Retrieval, or Search Program operated on a very simple retrieval method -- that of matching the descriptor codes on the question being asked against the documents' descriptor codes which are in the records in the file.

The process of retrieveing information can be broken down into a series of steps. (See Figure 8) First of all a request must be made for certain information. From this request the librarian then formulates a question or questions in terms of descriptor codes. These coded questions are punched into punch cards, and the cards are used by the computer to scan the master file. Any record which contains all of the descriptor codes in a question is said to satisfy that question and is reserved for printing

In addition to searching on descriptor codes, the program can make use of the classification to select only classified documents, and it can utilize the date of publication to select documents before a given year, during the year, or after the year.

One search run, which makes one pass of the file, can have a maximum of one hundred questions. Each question can have a maximum

of nine descriptor codes and the three special codes which deal with classification and date of publication.

A question sent over from the library as part of a search run is shown in Figure 9. Figure 10 shows the question as it appears on punch card and Figure 11 gives a portion of the output from that run using the Technical Library format which is similar to that used for the Accession Bulletin. The output in the Missile Safety format used the abbreviated source, and it will be noticed that this print out does not include all of the items in the Technical Library's listing. (See Figure 12)

An over-all view of the system shows the relation between the maintenance and search programs and the functions of each. (See Figure 13)

NWL IBM 7090

INFORMATION RETRIEVAL PROGRAMS

FILE ESTABLISHMENT/MAINTENANCE PROGRAM

a. ADD NEW RECORDS ---------

b. CHANGE EXISTING RECORD

c. DELETE RECORDS

ACCESSION BULLETIN

PRINT PROGRAM

LIST ENTIRE MASTER FILE

SEARCH – PRINT PROGRAMS

FIGURE 1

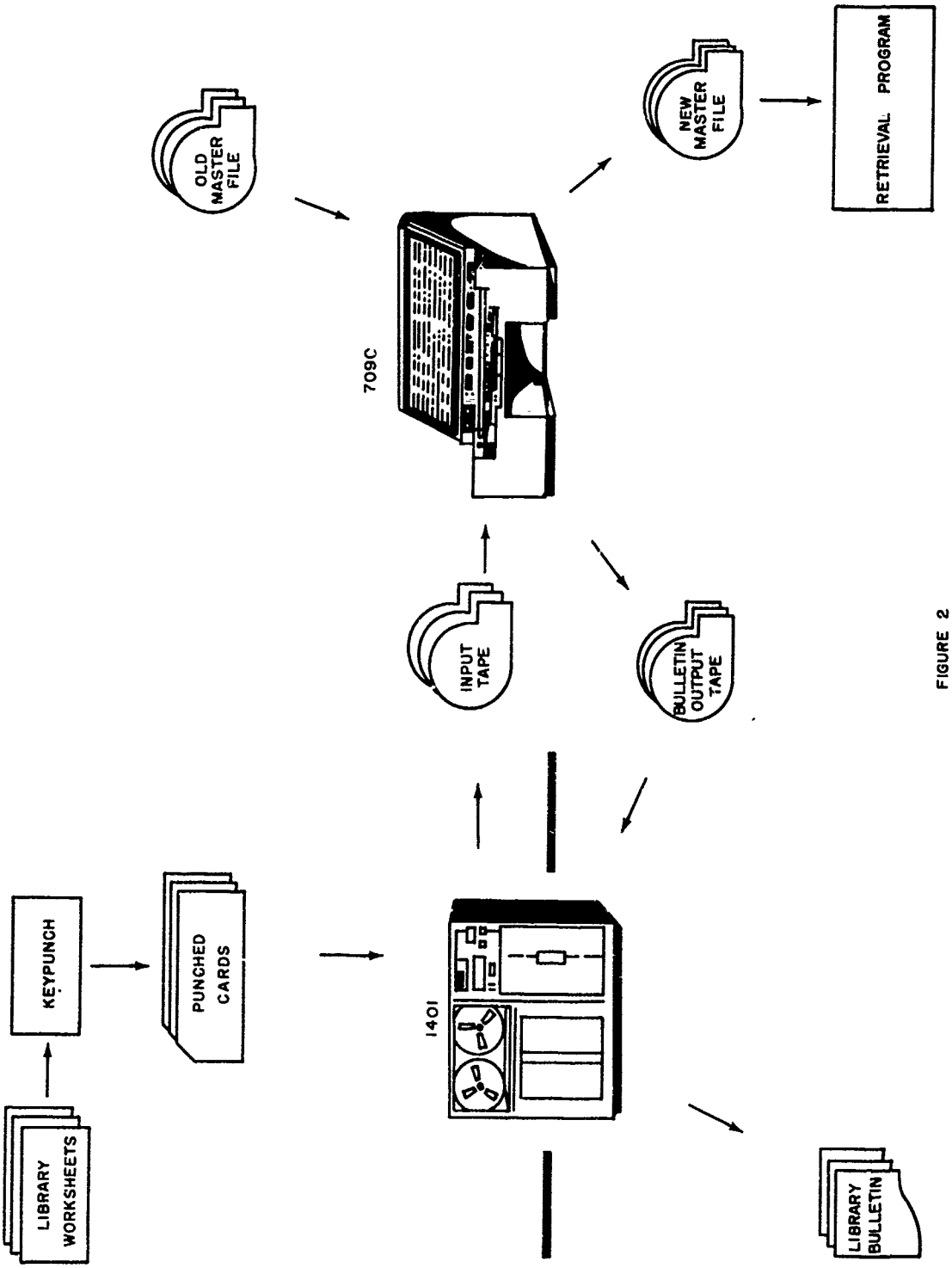

OLD MASTER FILE
NEW MASTER FILE
RETRIEVAL PROGRAM
709C
INPUT TAPE
BULLETIN OUTPUT TAPE
KEYPUNCH
PUNCHED CARDS
1401
LIBRARY WORKSHEETS
LIBRARY BULLETIN

FIGURE 2

SECURITY CLASSIFICATION _____

LIBRARY ACCESSION NUMBER 3 8

CARD 1	TRANS. 2			
1		SOURCE ABBREVIATION 9 26	REPORT NUMBER 27 44	SOURCE 45 80
2		SOURCE 9 80		
3		TITLE 9 80		
4		TITLE 9 80		
5		TITLE 9 80		
6		AUTHOR 9 38	DATE 39 44	CLASS. 45 50 / NO. 51 56 / ROUTING 57 62 / MISCELLANEOUS 63 80
7		AUXILIARY NUMBER 9 44	CONTRACT NUMBER 45 68	
8		DESCRIPTOR	CODE 9 14	DESCRIPTOR / CODE 9 14 / DESCRIPTOR / CODE 9 14
			15 20	15 20 / 15 20
			21 26	21 26 / 21 26
			27 32	27 32 / 27 32
			33 38	33 38 / 33 38
			39 44	39 44 / 39 44
			45 50	45 50 / 45 50
			51 56	51 56 / 51 56
			57 62	57 62 / 57 62
			63 68	63 68 / 63 68
			69 74	69 74 / 69 74
			75 80	75 80 / 75 80

LIBRARY DOCUMENT INDEXING WORKSHEET
NAVSHIPS 5070/13 (REV. 5-63)

FIGURE 3

SECURITY CLASSIFICATION _____

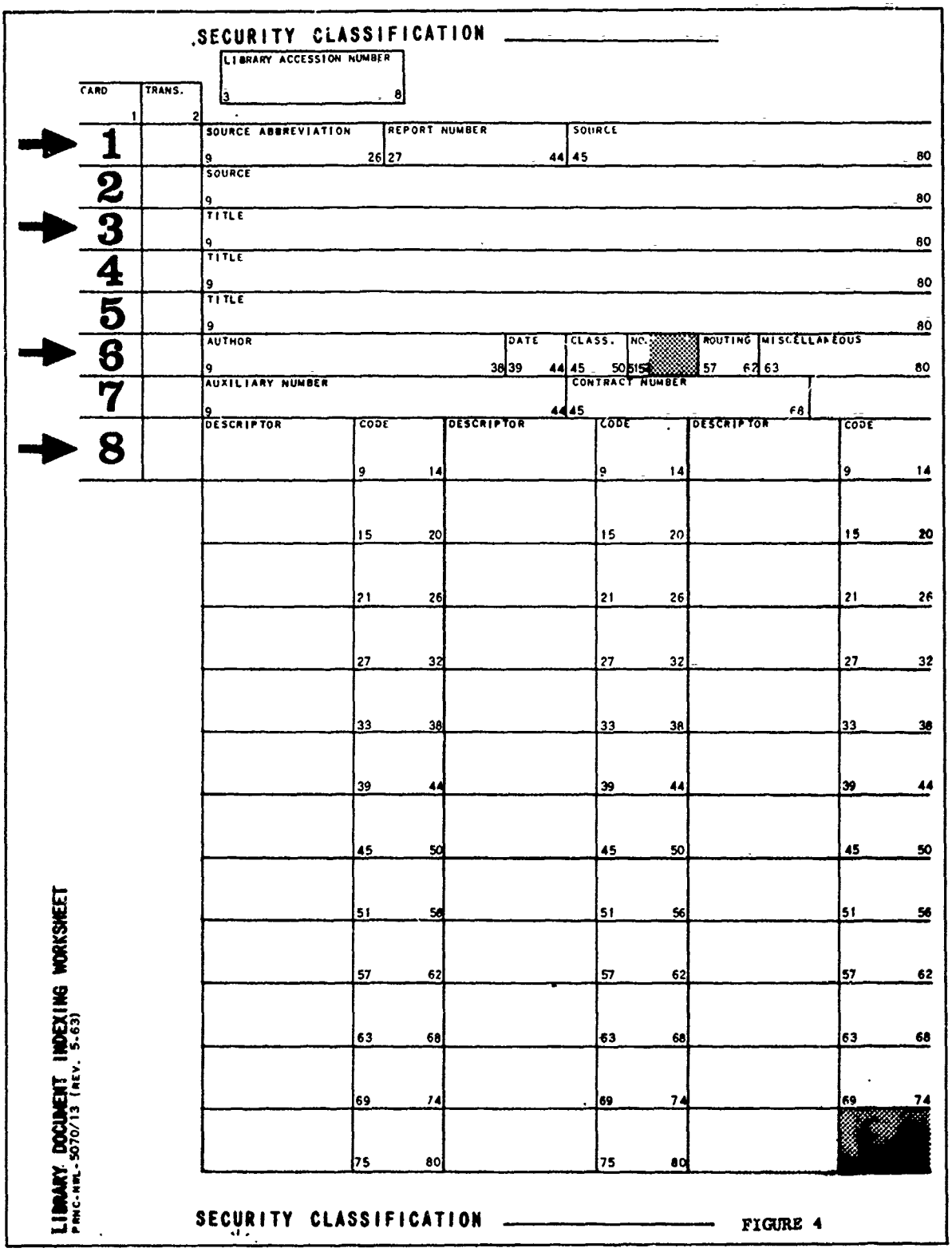

SECURITY CLASSIFICATION
LIBRARY ACCESSION NUMBER
3 8
CARD 1
TRANS. 2
1
SOURCE ABBREVIATION 9 26
REPORT NUMBER 27 44
SOURCE 45 80
2
SOURCE 9 80
3
TITLE 9 80
4
TITLE 9 80
5
TITLE 9 80
6
AUTHOR 9 38
DATE 39 44
CLASS. 45 50
NO. 51 56
ROUTING 57 62
MISCELLANEOUS 63 80
7
AUXILIARY NUMBER 9 44
CONTRACT NUMBER 45 68
8
DESCRIPTOR
CODE 9 14
DESCRIPTOR
CODE 9 14
DESCRIPTOR
CODE 9 14
15 20
21 26
27 32
33 38
39 44
45 50
51 56
57 62
63 68
69 74
75 80
LIBRARY DOCUMENT INDEXING WORKSHEET
PMC-NML-5070/13 (REV. 5-63)
SECURITY CLASSIFICATION

FIGURE 4

SECURITY CLASSIFICATION _____

LIBRARY ACCESSION NUMBER 009830

CARD	TRANS.							
1	E	SOURCE ABBREVIATION: ASYS	REPORT NUMBER: 62-ESD-14, VOL 2	SOURCE: AMERICAN SYSTEMS, INC.				
2		SOURCE						
3		TITLE: STUDY OF INTERFERENCE ASPECTS OF FRESNEL REGION PHENOMENA VOL. 2						
4		TITLE: HANDBOOK FOR NEAR FIELD COMPUTATIONS						
5		TITLE						
6		AUTHOR: R.A. GERLOCK	DATE: 0860	CLASS.: U	NO.	ROUTING: WD	MISCELLANEOUS	
7		AUXILIARY NUMBER: RADC-TDR-62-496, V. 2 AD295761		CONTRACT NUMBER: AF 30(602)-2507				

DESCRIPTOR	CODE	DESCRIPTOR	CODE	DESCRIPTOR	CODE
Interference	INFN	Computation	COMA		
Fresnel	FRES	Transmitting	TRNI		
Area	AREA	Distance	DIST		
Phenomena	PHEO	Radio Frequency	RADF		
Near	NEFL				
Field					
Electronics	ELCO				
Composite	COMO				
Rectangular	RECN				
Circular	CIRU				
Aperture	APER				
Antennas	ANTE				

SAMPLE

LIBRARY DOCUMENT INDEXING WORKSHEET
PMC-NRL-5070/13 (REV. 5-63)

SECURITY CLASSIFICATION _____

FIGURE 5

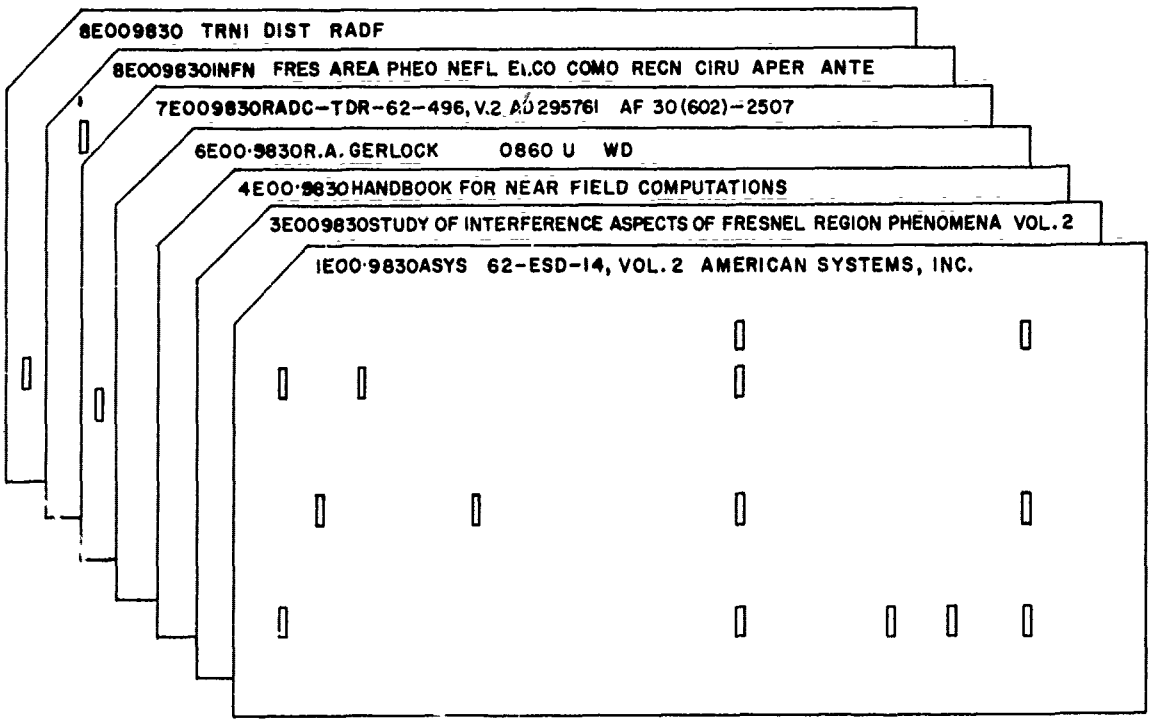

8E009830 TRNI DIST RADF
8E009830INFN FRES AREA PHEO NEFL EI.CO COMO RECN CIRU APER ANTE
7E009830RADC-TDR-62-496, V.2 AD295761 AF 30(602)-2507
6E00·9830R.A. GERLOCK 0860 U WD
4E00·9830HANDBOOK FOR NEAR FIELD COMPUTATIONS
3E009830STUDY OF INTERFERENCE ASPECTS OF FRESNEL REGION PHENOMENA VOL. 2
1E00·9830ASYS 62-ESD-14, VOL. 2 AMERICAN SYSTEMS, INC.

FIGURE 6

009830
AMERICAN SYSTEMS INC.

ASYS 62-ESD-14, VOL.2
STUDY OF INTERFERENCE ASPECTS OF FRESNEL REGION PHENOMENA VOL. 2 HANDBOOK FOR NEAR FIELD COMPUTATIONS

BY R.A.GERLOCK 0862 U
AF30(602)-2507
RADC-TDR-62-496,V.2 AD 295761 WD
INFN FRES AREA PHEO NEFL ELCC
COMO RECN CIRU APER ANTE TRNI
DIST RADF

009832
AIR FORCE SYSTEMS COMMAND., FOREIGN TECH. DIV.

ARDC FTD-TT 62-1313+1+2+4
THE FLOW OF GAS NEAR THE STAGNATION POINT OF A BLUNT BODY WITH A FINITE RATE OF EXCITATION OF VIBRATIONAL DEGREES OF FREEDOM, UNEDITED ROUGH DRAFT TRANSLATION -- AKADEMIYA NAUK SSSR, NO. 6, 1961

BY I.N.MURZINOV 1062 U
AD 292197 KYD
FLOW GASE STAG POIN BLUN BODY FNII
RATE EXCI VIBR DGEE FRDM AERD

009834
BALLISTIC RESEARCH LABS.

BRLA MR 1472
APPROXIMATE OFFSET PROBABILITIES OF HITTING

BY F.E.GRUBBS 0463 U
KR
DISR HITP COMA OFFT WARH
TARG MONL

009839
NAVAL BOILER AND TURBINE LAB., PHILADELPHIA NAVAL SHIPYARD

NBTL
EVALUATION OF DESTROYER ESCORT CASE HARDENED MAIN REDUCTION GEARS, EVALUATION REPORT NOS. T-184, T-185, T-205, T-232

BY W.BOYLAN 0661 U
AD 260236 TER9
EVAL DESR ESCO CASE HARN PRIR REDC
EQUI SHIP

FIGURE 7

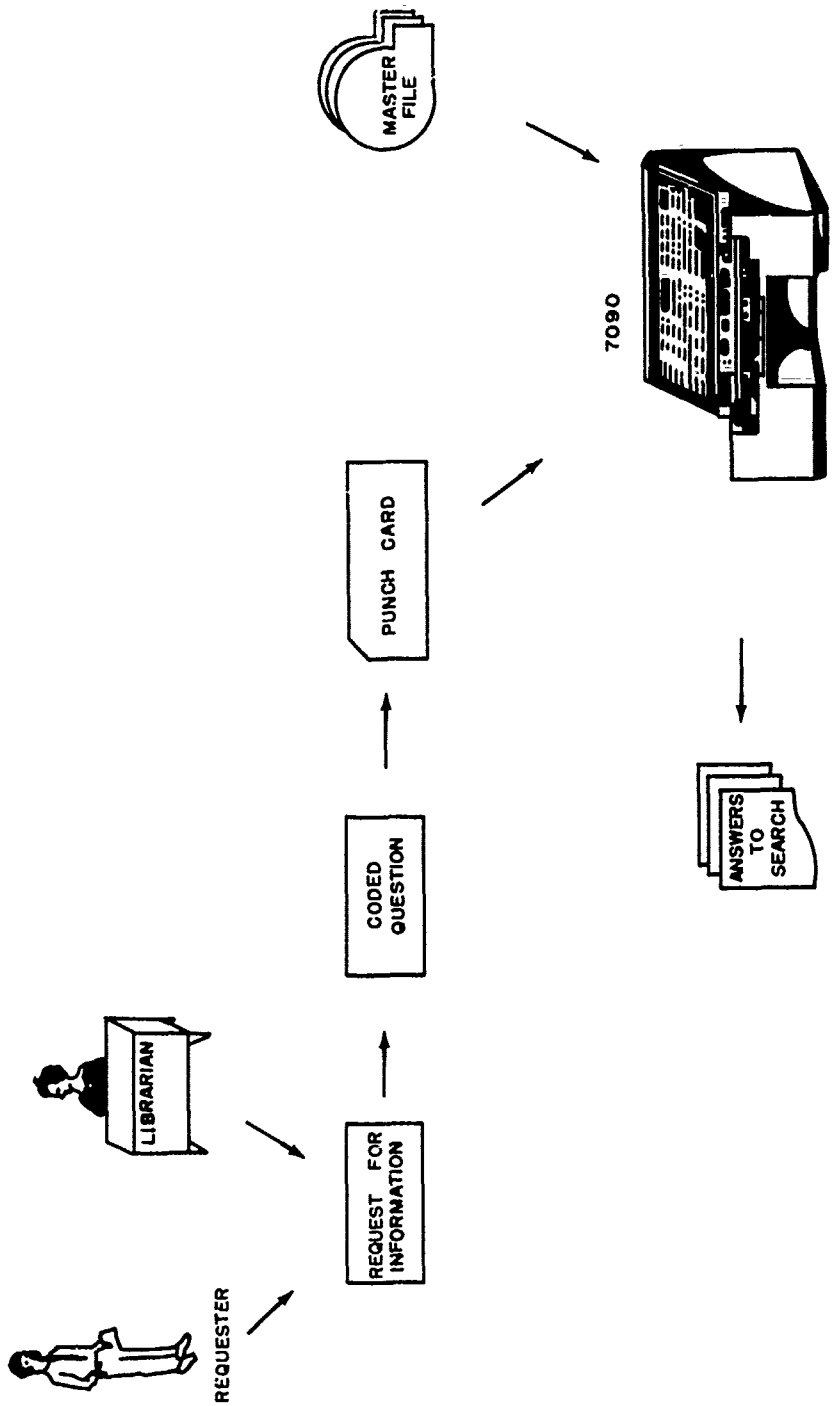

REQUESTER
LIBRARIAN
REQUEST FOR INFORMATION
CODED QUESTION
PUNCH CARD
MASTER FILE
7090
ANSWERS TO SEARCH

FIGURE 8

Retrieval question 9-18-63

1 Chemical warfare agents GB (CHEM) (WARF) (AGEN) (GBNE)

WWB - Brown 305

FIGURE 9

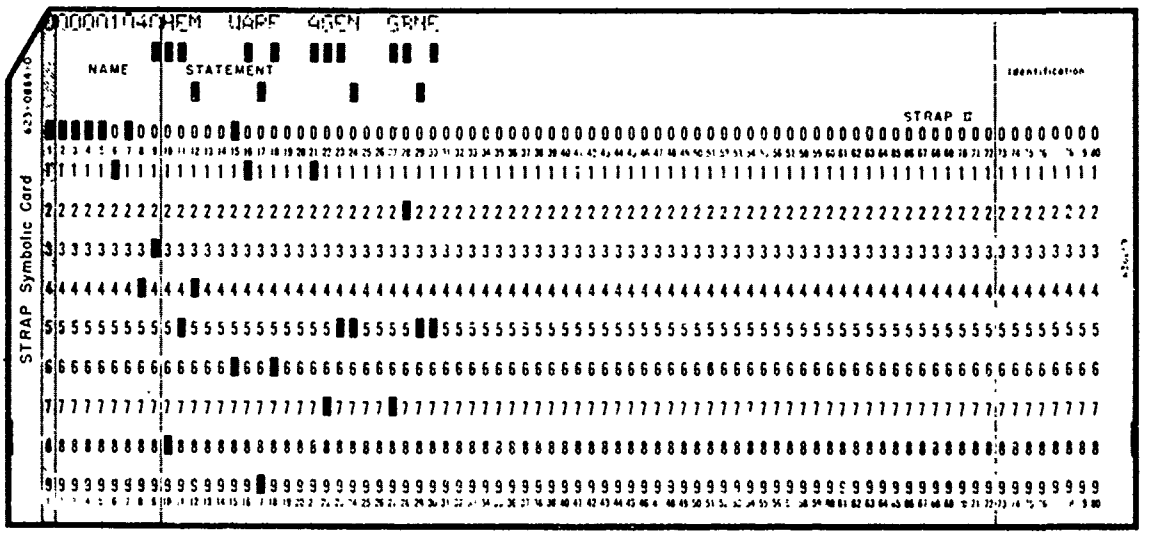


FIGURE 10

SAMPLE

QUESTION NUMBER 000001
DESCRIPTORS CHEM WARF AGEN GBNE

.002283
.CLOR 586 COLOU 586

.FINAL PROGRESS REPORT ROCKY MOUNTAIN ARSENAL MAR
.CH 1958 TO OCTOBER 1958

U

.EXOS HUMA EFFE REPT SYMT
.CHEM WARF AGEN GBNE ANAL

.002318
.DPGR 272 DPG 272

.ENVIRONMENTAL TEST OF SHELL, GB FILLED 105MM, M3
.60 SHELL, GB FILLED, 155MM, M121

U

.CHEM WARF AGEN GBNE SHEL TEST
.ENVI STOR EFFE
.0105 0155 MILM

.002397
.DARM TM-ORDBB-DR 4-41 DA TM-ORDBB-
.DR4-41

.COMPATIBILITY OF GB AND VX AGENTS WITH RDX, TETR
.YL, COMPOSITION B AND 70/30 TETRYTOL

U

.CHEM WARF CMPL AGEN GBNE VXCW TEST
.COPB TETT RDXE TETY TEMP CYCE DESE
.HIGH EXPL

.005573
.DARM TM 8-285 DEPARTMENT
.OF THE ARMY. (TM 8-285)

.TREATMENT OF CHEMICAL WARFARE CASUALTIES

1256 U

.NAVMED P-5041 AFM 160-12 WX
.CHEM WARF TREA CASU MANL NERG AGEN
.GBNE DARM

FIGURE 11

MISSILE SAFETY INFORMATION CENTER NAVAL WEAPONS LABORATORY, DAHLGREN, VIRGINIA REPORT DATE 18 SEP 63

INDEX OF PUBLICATIONS WITH DESCRIPTORS CHEM WARF AGEN GBNE REF. NWL REPORT 1762

ACC. NUMBER	LIBRARY PREFIX	CALL NUMBER SUFFIX	S C	ACL ACC. NUMBER	TITLE
009346	CDEE PTP	826	S		THE ROUTE OF ABSORPTION OF INHALED GB (U).
002283	CLOR	586	U		FINAL PROGRESS REPORT ROCKY MOUNTAIN ARSENAL MARCH 1958 TO OCTOBER 1958
005573	DARM TM	8-285	U		TREATMENT OF CHEMICAL WARFARE CASUALTIES
002397	DARM TM-ORDBB-DR	4-41	U		COMPATIBILITY OF GB AND VX AGENTS WITH RDX, TETRYL, COMPOSITION B AND 70/30 TETRYTOL
009500	DCTR	63-91	S		OUTLINE PLANS FOR TESTING IN FY 64 (U).
002318	DPGR	272	U		ENVIRONMENTAL TEST OF SHELL, GB FILLED 105MM, M360 SHELL, GB FILLED, 155MM, M121

FIGURE 12

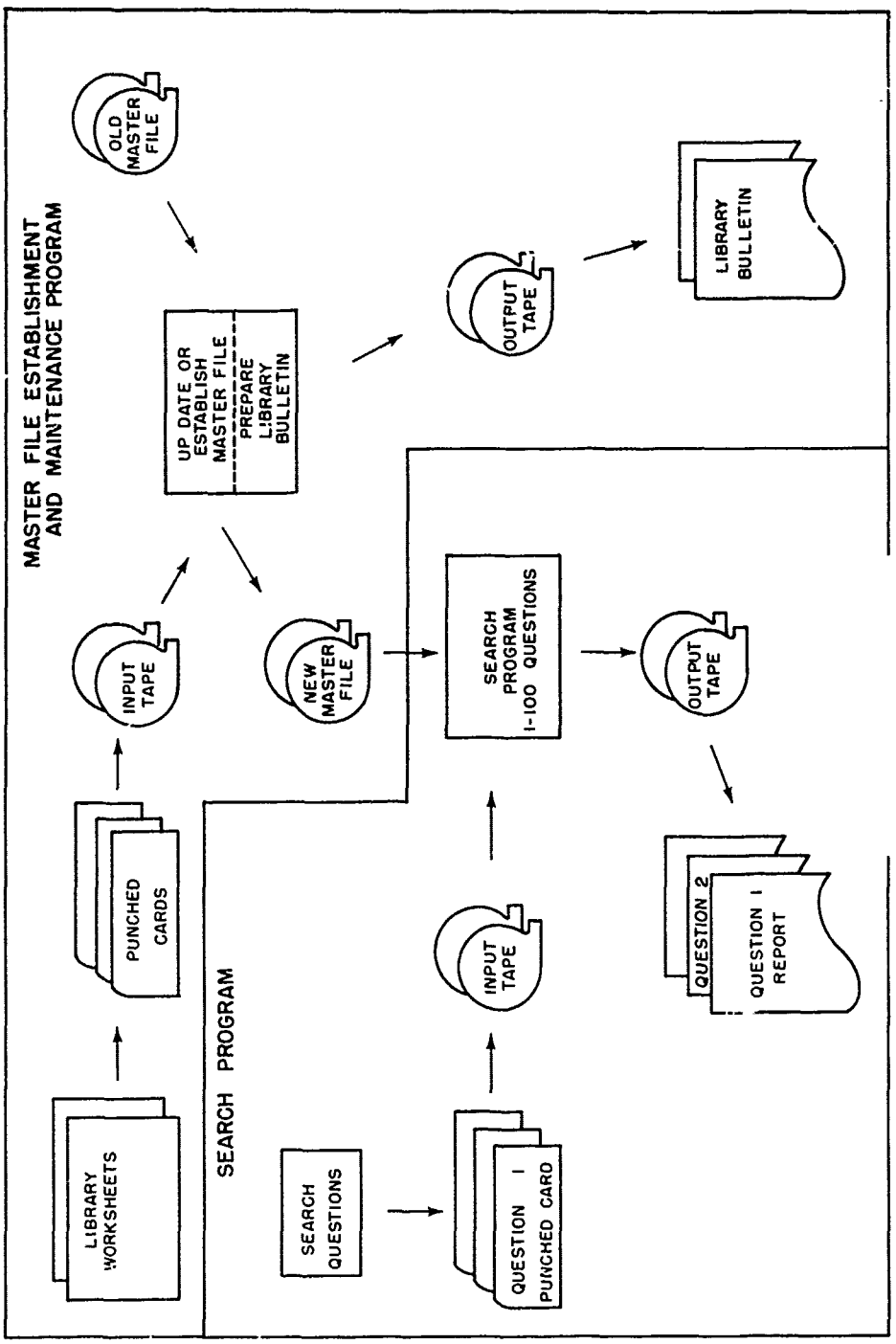

MASTER FILE ESTABLISHMENT AND MAINTENANCE PROGRAM
OLD MASTER FILE
UP DATE OR ESTABLISH MASTER FILE
PREPARE LIBRARY BULLETIN
OUTPUT TAPE
LIBRARY BULLETIN
INPUT TAPE
NEW MASTER FILE
SEARCH PROGRAM 1-100 QUESTIONS
OUTPUT TAPE
PUNCHED CARDS
SEARCH PROGRAM
INPUT TAPE
QUESTION 2
QUESTION 1 REPORT
LIBRARY WORKSHEETS
SEARCH QUESTIONS
QUESTION 1 PUNCHED CARD

FIGURE 13

AUTOMATED LIBRARY PROCESSES

AUTOMATED ROUTINES IN TECHNICAL SERVICES

by

Patricia T. Sievers
Air Force Cambridge Research Laboratory
Bedford, Massachusetts

This paper discusses automation of library processing routines applicable to small, medium, or large-sized libraries. It is concerned mainly with the conventional library which records bibliographic information concerning the physical volumes in its collections, as opposed to the information center which records data contained within volumes.

Use of computers has been successful in information situations where non-conventional methods of indexing, storing, and retrieving information have been introduced. As a result of these successes and successes in other fields, there are those who say that the age of the computer can be likened to the industrial revolution and, despite poor use of equipment and wild exaggerations of what machines can do, this is the computer revolution and it will continue to grow.

Why should the library be concerned with the computer revolution?

Staffing problems, greater workload, growing files - these are but a few of the factors usually cited to illustrate why libraries cannot ignore automation as the answer to some of their problems. A factor usually ignored, however, but of equal importance, is the burden that automation places on the librarian. For it is he who must aggressively assume the responsibility of defining what his role in the automated library will be.

The systems analyst and the computer engineer are experts in their fields and should be expected to contribute their technical know-how. The librarian, however, is the expert in his field. It is imperative, therefore, that the librarian remain the controlling and deciding force in planning for automation in any library situation.

It is beyond the scope of this paper to pursue these problems in any depth. My introductory remarks provide background, however, for what I am going to describe and that is the experience of the AFCRL librarians in planning for automation of certain of their technical processes.

During the past ten years, the AFCRL Library has been made increasingly aware of inadequacies in its own set-up. As early as 1956, the first of a series of library consultants examined the collection and recommended changes in certain practices and procedures. As a result, a few years later, the feasibility of mechanizing clerical routines precipitated a decision to systematically evaluate all routines in the library, especially in the area of technical services.

The AFCRL Library's approach to automation is applicable to libraries in general. I say this for the following reasons: First, the "total systems approach" to automation is used; and second, all planning is geared to meet the special requirements of a conventional library.

What is the "total systems approach" to automation?

The total systems approach analyzes all library procedures and redefines them into units of work. These units of work are then systematically reviewed, and the feasibility of replacing manual procedures by mechanical operation is explored. Each unit is considered in relation to all others to provide a totally integrated and compatible system.

The steps in the total systems approach are: (1) systems description; (2) adjustment and evaluation; and (3) formulation of requirements.

First, Systems Description:

In systems description, a step-by-step review is made of all tasks performed by either clerical or professional personnel. This includes detailed written summaries of work performed and accurate or approximate estimates of necessary times and costs. It should be mentioned in passing that for those of us in Civil Service who consider our manpower in terms of personal slots, rather than total budget allotments as is usually done in industry, the analysis of cost here for civil service is a short hand way of stating efficiency from each of our personnel.

Results of systems description, then, are analyzed and summarized, first into procedural work diagrams and then into flow charts, illustrating graphically the flow of materials through the various library processes.

The procedures involved in each task and the records generated are reviewed critically in relation to the system as a whole.

The written procedures and flow charts, generated as a result of systems analysis, help the librarian evaluate the scope and relative importance for all routines and to balance them in terms of time and cost.

At AFCRL, for example, the ordering and receipt of LC card sets appeared to be a smooth and economical operation. But we discovered that it wasn't when the process was flow-charted to show the total time and cost spent in search, order, verification, reorder, and those times when, due to nonavailability, we had to type complete card sets ourselves.

This is by way of pointing out that the steps in systems analysis frequently point out areas of inefficiency which otherwise would never be questioned. In automation, machines perform on the basis of instructions given them. Therefore, the simpler and smoother the manual procedures are, the easier they are to mechanize. Duplication of effort and unnecessary routines must be eliminated while necessary routines must be progressively evaluated and refined until operating procedures are as smooth and coordinated as possible.

This, then, is a prerequisite for automation: an efficiently coordinated system of manual procedures.

Following systems analysis and evaluation, related series of tasks are ready for automation.

The next step is to select the type of equipment to be used. However, before equipment selection can be accomplished, the library must formulate its own specific requirements. These requirements are, in essence, individualized guidelines for automation and will greatly influence the decisions made by the library on equipments for library operations.

Several factors must be considered while formulating these requirements. First, unless there is a complete change to another method of recording and handling bibliographic information, the essentials of the existing system must remain. For example, the AFCRL Library evaluated its card catalogs. Two of the factors considered were: (1) the feasibility of converting some 180,000 titles already cataloged to another record form; and (2) the possibility of replacing the card catalogs with book form indexes were explored. Our conclusion was that the card catalogs would not in the foreseeable future become an obsolete bibliographic tool even though book form indexes of currently cataloged items were easier and cheaper to make and maintain. This conclusion meant that the generation of card sets must continue as before in order to assure the continuity of recording and controlling the entire collection already cataloged, and in order to preserve the integrity of the catalog as a reference tool for the future.

Since decisions similar to these must be made by all conventional libraries when considering automation, the five general systems requirements of the AFCRL Library might be helpful. They are repeated here.

1. The library will invest in those mechanical devices which will serve to improve subroutines in all parts of the system. However, information will be entered as soon as possible into a machinable media (i.e., punched tape or punched cards) for eventual computer use. This conversion of information to a machinable media will be acoomplished as a byproduct of usual routine tasks to be performed.

2. Equipments used must prove economical in terms of time or money and hopefully, provide extra or additional service. Any equipment purchased outright would: (1) be justified on the basis of a five- to seven-year depreciation, and (2) be considered first for those areas where the improvement of work flow is crucial.

3. The requirements for input (or keying) and output (or print-out) must be compatible with conventional practice. For example, conventional practice in our library does not allow for the abridgment of titles or authors. As aconsequence,input equipment cannot be so restrictive that essential information must be eliminated. Likewise, output equipment cannot be so restrictive that the form or format of output desired cannot be met. Our catalog cards, for example, must follow closely the form of catalog cards already in our catalog.

4. It is realized that there will be resistance to change. Problems of personnel resisting automation should not be minimized or overlooked. Therefore, a training program must be initiated paralleling the implementation of the automated system. In addition, considerable time should be spent on the preparation of detailed manuals of procedure. The system must be designed for operation within the library by the library staff. Peripheral routines and computer operation may be run off-location, but input keying and administration of the program is a library responsibility.

5. The introduction of automated techniques at the AFCRL Library is to be gradual; changeover from manual to machine methods will continue until the most efficient degree of automation is achieved. The system, then, is open ended. We are not automating for the sake of automating, but only when and where the overall system can be improved.

Only after systems analysis, evaluation, and the formulation of requirements have been completed can equipment be investigated.

Equipment requirements. Let's look first at automatic devices to be used for tasks other than the creation of essential machinable records. This equipment can be electrical, photographic, mechanical, or semi-automatic.

Selection of devices to be used for tasks other than essential machinable records vary from library to library. At AFCRL, for example, we have investigated a variety of such devices. We are interested in devices that reduce lettering time for books, and we will undoubtedly invest in the latest typewriter system of lettering when it appears on the market. We have invested in a camera to perform a specific searching task. We use a Xerox 914 for copying routines outside the system. We are considering special die cutting devices and semi-automatic devices for rough sorting of catalog cards. While these items may or may not be applicable to other libraries, they are used in our library to smooth work flow from one series of tasks to another and are, therefore, essential to our system.

Input coding devices. By contrast, the problem of evaluating machinery for the processing or encoding of essential data is similar in all

conventional libraries. First, a misconception should be clarified. While computers, in themselves, vary in type, capability, and cost, and require expert knowledge to evaluate and program them, the principles of encoding data onto machinable media (thus making it acceptable or compatible for most computers) is relatively simple. Two basic or fundamental requirements must be considered.

First, information for computer use must be machine accessible. Making information machine accessible requires essentially that it be translated from written or printed records into a machinable form, usually punched tape, cards, or magnetic tape. This task is usually accomplished using either a tape typewriter or keypunch.

Second, information for computer use must also be machine interpretable. This task takes considerable preliminary planning and analysis. To make information machine interpretable requires that discrete items of information be coded so that they can be automatically identified by machines.

In general, if punched tape is used as the input media, fixed symbol coding is used. Each item of information is tagged with a special symbol in the input process. Important here is that these symbols are printing characters. These symbols are used to signify one type of information to the computer.

On the other hand, if punched cards is the input media, fixed field coding is generally used. This system of coding places particular kinds of information within certain fixed positions in the machine medium. Positions on the punched card, then, are reserved for particular kinds of information. On punched cards, for example, Columns 1 to 10 may be reserved for a call number, while on punched tape, the call number would be identified by typewriter symbols, both immediately before and after the call number. These symbols are also referred to as boundary codes.

Information in either media is always recorded in strict sequence. Neither coding method is completely satisfactory. In the first (punched tape input), a special fixed symbol must be devised and used to identify every type of information encoded. The generation of these symbols becomes extremely cumbersome when many different kinds of information are distinguished. The number of symbols which can be devised are also subject to the limitations of the number of printing codes available on the input device. IBM keypunches, for example, have 48 printing characters; tape typewriters vary from 80 to 90. Fixed symbol coding of data, as on punched tape, creates additional problems in printout. If the symbol codes are not printed out for each item of information, proofreading routines become cumbersome and require continual reference to a master record. If they are printed out, the symbols constitute a cluttered record which reduces legibility. There is also the problem of correcting or editing tapes, which reduces input typing time.

In using the second method (punched cards), one is limited to machinable medium with 80 columns of information - each column accepting only one

printing character. Information must then be either drastically abridged or coded to run to additional cards. The keypunch is limited in the number of actual printing characters that can be used. In addition, keypunching for input requires special training for the operator and creates proofreading problems, or requires use of a verifier. A recent study has shown that input keying speed on a keypunch is about one-half that of input typing speed on a tape typewriter.

The librarian must be acquainted with the methods of encoding data and the input devices available if he is to understand and communicate with the computer expert. Conversely, if the librarian is not able to describe in simple terms the problems and limitations imposed on library procedures by established practice, the computer expert will not be able to give much aid. The problems of recording bibliographic data for machine interpretability in the AFCRL Library was resolved by designing a special encoding format called the "machine interpretable natural format." It is a solution which uses both fixed fields and fixed symbols. It was formulated by the combined efforts of both librarians and computer people. It is adaptable to either punched cards or tape.

Preparation of data for machining, then, requires: (1) a knowledge of coding techniques; (2) a knowledge of the special characteristics of the data to be encoded; and (3) the ability to select, identify, and format each discrete bit of information in order that the best type of device can be selected for data input.

Machines for manipulating data. The selection of machines to process or manipulate data once it is in machinable form is dependent on other factors. These include the volume of data and the numbers and kinds of manipulations to be performed.

For example, if only simple sorting, printing, and collating is required, the need for high-priced or complex equipment may not be justified. The state of the art is changing so rapidly, however, that prices of computers have dropped in the past five years. There are computers available now, selling for from 15 - 20,000 dollars, which do essentially the same task as the 100,000 dollar computers of five years ago. Some of these computers are general-purpose computers, able to do many tasks, while some are special-purpose devices that perform a single task. This indicates that a computer may well be within immediate possibility for some libraries; for others, intermediate equipment will suffice.

Printout devices. Unfortunately, the state of the art, as of this time, is such that not many computers can automatically print out a large number of special characters, alternate types of printing fonts, or, for that matter, even print in upper and lower case. This is due, in part at least, to the fact that computer people do not yet understand the peculiar and particular needs of the library.

This is by way of illustrating that the end result of all this effort - the printout - creates its own unique problems. In some configurations,

computers are capable of producing the exact printout required; in other configurations, computers must produce an intermediate record, which is then printed out on additional peripheral equipment to achieve the desired printout. The librarian has, at present, a limited choice of equipment available to him. But this should not force him to make compromises on what he considers the basic requirements of his system.

In summary, the total systems approach involves systems description, evaluation, and formulation of requirements, and this is the most important first step to automation. Knowledge of input devices and the encoding of data follow. Finally, the selection of output equipment must be considered.

AUTOMATED ROUTINES IN TECHNICAL SERVICES

by

Paul Fasana
Air Force Cambridge Research Laboratory
Bedford, Massachusetts

The monograph processing system about to be described has been in operation for six months and has been used to process approximately six thousand titles. The description will illustrate on a very practical level certain of the more general comments made by Mrs. Sievers.

I should like to spend several minutes discussing in some detail what was involved in the preliminary planning for the monograph cataloging system. Some of this will be repetitive, but it will be more to the point if these factors are viewed in light of the actual situation. The planning process can be separated into three phases:

1. The description of the system or systems analysis.

2. Formulation of the minimum requirements for the system as we wanted it.

3. Identification of the critical points or major problem areas in the overall work flow.

The problems of systems analysis have been labored at length. I shall, therefore, skip over this and go on to summarize the minimum requirements formulated for the monograph system. It was decided that the proposed system must be as efficient as the old system. "Efficient" meant that it must be cheaper and able to process a greater number of items. This seems obvious, but few systems as described in the literature give proper emphasis to this. Most systems descriptions avoid questions of cost. This

is natural, I guess, because computers and data processing equipment are expensive. The people necessary to operate these machines are expensive. This means that an automated system often is more expensive (and less efficient) than the system it replaces, especially if it is poorly planned.

A second requirement was that none of the standards of the old system could be lowered. Since the AFCRL is a medium sized research library, the problem of bibliographic description and control is critical. We cannot accept the drastically abbreviated control records and catalog cards that technical libraries can. In addition, the visual aspect of the bibliographic records had to be fairly sophisticated and easily integratable with the already existing catalogs. This meant that we had to have at least 86 printing characters, rather than the restrictive 48 available on punched card equipment. These considerations severely limited the number and kinds of machines that we could consider and finally led us to choose punched paper tape typewriters as the input device for this monograph sub-system.

A third requirement was to see if it would be possible to provide more and better services without increasing expenses. These additional services were thought of in terms of accessions lists, book form bibliographies, and the like.

The fourth and last requirement was that all of this must be accomplished without increasing the number of staff; if nothing else, we have met this requirement.

PROBLEM AREAS

I shall briefly describe the problem areas identified as a result of the preliminary flowcharting. A description of these problem areas will help you to understand why procedures were organized as they were, and what prompted the selection of certain pieces of equipment used. Three major problem areas were distinguished:

1. Preliminary verification procedures and LC card ordering routines.

2. Cataloging procedures.

3. Catalog card generation routines.

PRELIMINARY VERIFICATION AND LC CARD ORDERING

Verification and LC card ordering are closely related routines. Once an item is received in the cataloging section, it is searched in the Library of Congress printed catalogs. This search duplicated a search already performed by the acquisitions section preliminary to ordering the item. There was no interchange of information between these two sections. A time cost study showed that we were spending an average 10 to 15 minutes of clerical time (or 32-50¢) per title for this preliminary search. LC card ordering routines required an additional 3 to 5 minutes per title. Our

troubles with LC card ordering procedures are rather typical. Of 100 LC card sets ordered, we averaged a return of about 60 titles on first order. The remaining titles were recycled into the ordering procedures, and ultimately (often after as many as 7 to 10 reorderings), we were able to receive 80 to 85% of the original hundred titles. The minimum time lag for these procedures was 10 days and for certain titles was as high as six months. In terms of money, we were spending a minimum of $1.20 per title before a book ever reached the catalogers. In terms of time, every title was delayed at least two weeks before it was ready for cataloging.

CATALOGING

The monograph cataloging section has three catalogers. Their average cataloging rate was about 100 titles per month, or about 3 titles per day per cataloger. The cataloging capacity was roughly 10% to 20% of the acquisitions rate. This meant that a tremendous backlog was continually building up. Cataloging in the AFCRL Library involves complete bibliographic description, classifying, and subject analysis.

The usual preparation of author, subject, and classification authority files is part of the catalogers' responsibility. Most of the clerical functions necessary to maintain these routines were performed by professional catalogers. This, in part, explains why the cataloging rate was so low. Another factor was that the catalogers spent a good deal of their time consulting authority files removed from the immediate cataloging area. This second factor accounted for about 30% of the catalogers' time.

An exact cataloging cost is impossible to calculate, but we approximate that the Library was spending at least $10.00 an item just for cataloging.

CATALOG CARD SET PRODUCTION

Catalog card sets were created either by typing headings on duplicate LC unit catalog cards or completely typing each card in the set. To prepare a card set using LC cards, an average of 10 minutes of clerical time was needed. To completely type a card set, an average of 35 minutes was necessary. Sorting and filing required an additional four minutes per card (or 28 minutes per card set).

The overall cost of cataloging a title was, therefore, somewhere between 15 and 20 dollars. Probably the real figure was something like $17.00 a title. These costs may seem high, but in reality, they were not. After comparing them with other libraries, we have found them to be comparable. In terms of processing time, a minimum of one month was spent cataloging a title. The upper limit here cannot be computed since the backlog has not yet been eliminated.

This time and cost, together with the time and cost of ordering LC cards and searching during precataloging routines, was considered inordinate, especially when one considers that the only product of the system was a two dimensional, visible record to be used in the card catalog. This last

factor precipitated our decision to start automating the monograph cataloging section before any other in the Library.

DESCRIPTION OF THE PRESENT MONOGRAPH PROCESSING SYSTEM

The monograph cataloging system as it is presently in operation is made up of three subsystems. Each subsystem corresponds with one of the problem areas outlined earlier. In each, the focus of all routines is a piece of equipment. The three subsystems are identified as follows:

1. Precataloging search routines using an MP3 Polaroid camera.

2. Cataloging routines making use of various machine-generated authority lists.

3. Bibliographic encoding and catalog card generation using tape typewriter and special purpose data processing device called the "Crossfiler".

Each subsystem is relatively autonomous, but this does not mean that they are independent of one another. The work flow within and between the various parts are efficiently integrated. Modular organization of this type is desirable for two reasons: (1) if it becomes necessary to change or modify any of the procedures, it can be done with a minimum of disruption to other parts of the system; and (2) the system is not independent on a single piece of equipment, which, if obsoleted or withdrawn would mean the collapse of the entire system.

PRECATALOGING SEARCH ROUTINES

In the present system, an item is searched once. Verification routine for acquisitions and search procedures for cataloging are combined. An average entry requires four minutes of search time. Ninety-four percent of the titles searched are eventually found. When an entry is located in one of the printed catalogs, a photograph is taken on the MP-3 Polaroid camera and attached to a processing slip which travels through the system. The MP-3 camera is Polaroid Land type camera mounted on a stand. It enlarges the object being photographed and produces a glossy print in about ten seconds. In our system, we enlarge all photographed entries to the size of a regular 3 x 5 card. The cost of a single print is approximately 8.5¢; if depreciation costs are added, the cost comes to about 9.5¢ per print. When the book is received, the photographed entry is attached to a cataloging worksheet and inserted in the book. The catalogers use this photographed entry to catalog the book.

As a result of the simplified work flow, LC card ordering has been eliminated. This means that (1) cumbersome ordering routines, (2) problems of temporary book storage, and (3) file maintenance are all eliminated. The time lapse between the receipt of a book into the catalog section and its delivery to the catalogers is reduced to less than a day as a consequence.

A comparison of time/cost figures with the old system will dramatically illustrate the efficiency of this new search routine:

1. Processing time has been reduced from a minimum of two weeks to less than a day.

2. Costs are reduced from $1.20 to about 35¢ a title.

CATALOGING ROUTINES

We approximate that about 30% of a cataloger's time is spent in queuing up to consult the various authority files necessary to the cataloging procedure. This continual interruption greatly reduces both the cataloger's accuracy and productivity. We reasoned that this waste of valuable professional time could be eliminated if each cataloger had at his desk a book-form copy of the needed authority lists. An experiment was set up to test this hypothesis. A cataloger was provided with book-form equivalents of all the needed authority list, and 2,500 books to catalog.

Two sets of statistics will be quoted from this experiment. The first showed that a cataloger could catalog an average of 63 titles a day if information were provided in the form of an LC card. The range here was from 43 to 83 titles cataloged per day.

The second set of figures showed that he could catalog an average of 33 books a day doing original cataloging. The range here was from 11 to 22 books cataloged per day.

It is unreasonable to expect a sustained effort of this sort from any cataloger, but results of this experiment indicate that a cataloging rate of about 25 books a day is not unreasonable, provided that the cataloger is given the proper support tools.

As a consequence, we are in the process of preparing several of our authority lists for machine conversion. Preliminary planning for the serie authority and the subject authority are complete and the programs are being written. We plan to start keying data before the end of the year.

The cost of converting these authority lists will be high, but we feel that we are justified in terms of the hoped-for increase in cataloging efficiency. I think a simple cost comparison will substantiate this assumption. Our cataloging cost in the past was approximately $10 per item. The cost per item in the new system is about $3 per title. Our annual cataloging rate is such (5,000 to 7,000 titles) that this savings will more than offset the cost of converting the files.

CATALOG CARD SET GENERATION

Until six months ago, 90% of the catalog cards used in our catalogs were LC cards. LC cards are relatively inexpensive and it would seem that the most efficient and economical way of creating catalog card sets would be to use them. We've found, though, that this is not the case, at least in our Library. When all of the costs of ordering, annotating, and processing IC cards are computed, the expense is significant. A cost study was done to

ascertain how much it was actually costing the Library to use LC cards. Our final figure was 21¢ per card. This figure does not include cataloging costs. We average 7 cards per set, so the cost per title is about $1.50. We've compared this figure with other libraries in the area and have found that it is comparable.

But cost is not the only, or even the most important, consideration here. The unit catalog card contains all of the information discovered and recorded about particular bibliographic items. We decided, therefore, that it was the obvious record to encode for machine manipulation. Once this record is in machinable form, it could be used to automatically produce various other records used in the library. The problem of encoding data can be thought of in terms of:

1. MACHINE ACCESSIBILITY, that is, the machine media to be used, and

2. MACHINE INTERPRETABILITY, that is, identifying the kinds of data encoded.

The library decided to use automatic tape typewriters to encode bibliographic data in its monograph system because of their ease of operation.

To solve the problem of machine interpretability, a special encoding format was designed to be used for the monograph cataloging system. This format is called "machine interpretable natural format." There are two primary objectives in designing this format: (1) input processing procedures were to be kept as simple as possible, and (2) every item of information included must be completely machine identifiable. Since the data on catalog cards is primarily textual and variable in length, a relatively uncontrolled method of encoding is needed. For example, an average catalog card has 300 - 500 characters (or between 75 and 150 words) of essential information, none of which can be abbreviated or omitted. Not only must all of this information be encoded, but in printout must simulate (or approximate) the conventional catalog card. To correspond with the paragraphing of data on conventional catalog cards, four major paragraphs (or fields) were provided for in the format. To correspond with the various elements included on the conventional catalog card, a defined number of major statements (or subfields) were distinguished. For example, in Paragraph four, the "tracing paragraph," three major statements (subject, added entry, and series) are distinguished. Within each of these major statements, an uncontrolled number of phrases are distinguished. In the subject statement, for example, there can be any number of distinct subjects.

Since natural typing manipulations are used as boundary codes, no artificial codes of special symbols are used to identify the different kinds of data included in the format. "Natural typing manipulations" simply means using the usual carriage returns, tabulate shifts, and spaces. Paragraphs are distinguished by a carriage-return-tab-tab sequence. Within paragraphs, major statements are distinguished by a sequence of three spaces; within statements, phrases are distinguished by a sequence of two spaces.

The variable length field allows the format to accommodate itself to the data being encoded. The nested field structuring (i.e., cards, paragraphs, statement, and phrases) allows the data included to be multi-level.

Formating for machine encodement does not affect or restrict the way in which the cataloger records bibliographic data. Catalogers record bibliographic information on a specially designed worksheet. The tape typist types directly from this worksheet. She uses an automatic tape typewriter and simulataneously prepares a punched paper tape representation of the catalog card. The boundary codes used to identify the various kinds of data are inserted by the typist as a natural part of the typing routine. This first typing is proofread and corrected. The resultant tape is the "machinable record" of the catalog card, which is used for all subsequent routines.

It should be emphasized that once this machinable record has been produced, no additional typing or proofreading by humans is again necessary. All subsequent typing and manipulation of data is done unattended and automatically by machines.

At this point in our system, the macine record, or input tape, is ready for processing on the Crossfiler.

The Crossfiler is a piece of equipment specially designed for use within our library. It is not a computer, but does perform a limited number of functions similar to a computer. The Crossfiler accepts the input tape, reads and interprets it, manipulates the data contained on it, and punches out a secondary tape. This secondary tape is the tape representation of a complete catalog card set and is made from the tape representation of the single unit catalog card. The secondary expanded tape is then loaded into a tape typewriter. The typewriter, automatically and unattended, types out this secondary tape on continuous form card stock. The printout is a complete catalog card set with appropriate heading printed at the head of each card. Cards are immediately ready for filing once taken off the typewriter. The secondary tape is then destroyed. The original input tape is stored to become the machine searchable file.

The total processing time for an item through this procedure is 14 minutes. This figure is broken down as follows: (1) input typing routines, including proofreading and correction, takes an average of 6 minutes per title; (2) processing time on the Crossfiler is approximately one minute per card set; (3) typing out time is approximately seven minutes per card set.

Six months operating experience with the Crossfiler and its associated routines has shown that card sets generated with it are cheaper than LC cards. I mentioned earlier that the cost of using LC cards was 21¢ per card or $1.50 per card set. Crossfiler produced cards cost us about 11 or 12¢ per card, or about 80¢ per card set.

In addition, the system is more efficient in terms of overall processing time. Previously, it required a minimum of three weeks to a month to process and catalog an item. At present, it takes five days to process,

1.

Meinke, Hans Heinrich, 1911- ed.
Taschenbuch der Hochfrequenztechnik. Unter Mitarbeit zahlreicher Fachleute hrsg. von H. Meink und F.W. Gundlach. 2., neubearb. Aufl. Berlin, Springer, 1962.
1641 p. illus. 21 cm.

1. Electronics. 2. Microwaves. I. Gundlach, Friedrich Wilhelm 1912- joint ed. II. Title

TK7835.M44 1962 62-14126 ‡

Library of Congress [3]

2.

621.38
M4
1962 Meinke, Hans Heinrich, 1911- ed.
Taschenbuch der Hochfrequenztechnik. Unter Mitarbeit zahlreicher Fachleute hrsg. von H. Meinke und F.W. Gundlach. 2., neubearb. Aufl. Berlin, Springer, 1962.
1641p. illus. 21 cm.

Electronics. Microwaves. Gundlach, Friedrich Wilhelm 1912- [jt. ed.]

3.

CR's

621.38
M4
1962 Meinke, Hans Heinrich, 1911- ed . CR — Para I
T T Taschenbuch der Hochfrequenztechnik. sss Unter Mitarbeit zahlreicher Fachleute hrsg. von H. Meinke und F.W. Gundlach. ss 2., neubearb. Aufl. — Para II
sss Berlin, Springer, 1962. CR
T T 1641p. ss illus. ss 21 cm. CR — Para III

T T Electronics. Microwaves. sss Gundlach, Friedrich Wilhelm 1912- [jt. ed.] — Para IV

CR's

1. A Conventional library catalog card

2. A bibliographic adaptation of MINF which simulates the conventional catalog card

3. The machine interpretable natural format showing significant sequence and boundary markers (CR - carriage return, T - tabulate shift, s - space)

catalog, and file cards in the catalog for an item once it is received in the cataloging section.

I have been throwing out cost figures and times rather fast. I'll take a moment at this point to summarize these figures. The total cost for an item to be processed and cataloged in the old system was a minimum of $12.70. In the new, it's $4.15. In terms of processing time, we now spend about a day and a half as opposed to 2 to 3 weeks.

CONCLUSION

Currently, we are experimenting with these same monograph input tapes (or machine files) to produce a number of other records and lists in addition to catalog card sets. Using simple Programmatic Flexowriter routines, we have been able to automatically produce book cards and circulation records.

Original input tapes are also amenable to computer processing. We recently were allotted time on one of the Base computers and have done a number of listing experiments with these same input tapes. The results of these experiments are plans and programs for a book-form catalog of all items processed so far in the system. The book-form catalog will be in two parts. The first part will be a classed arrangement of main entries; the second part will be an alphabetical index by author, title, and subject. We expect to have the first copies of the catalog within the next few months. Plans call for quarterly cumulative supplements.

It should be emphasized that all of the additional records and lists that I have just described are the result of the single input typing done during monograph cataloging and are, in essence, automatic by-products of the monograph processing system. No additional typing, keying, or proofreading of information is necessary.

In concluding, I should like to emphasize three points:

1. Automation requires a great deal of careful planning and preparation. The results, though, more than justify this rather tedious preliminary planning. At least this has been our experience.

2. The librarian is the expert in the field of librarianship. The rudiments or computer technology and systems analysis are not beyond his capability. He has, therefore, the obligation of assuming the responsibility of deciding and directing the course of automation in libraries.

3. Automation is expensive, but if properly planned and implemented, it need not cost more, or even as much, as the system it replaces. I think AFCRL's experience in automating certain of its technical services illustrates this point.

DISCUSSION

Mr. Fasana: If there are any questions Pat and I will attempt to answer them at this point.

Q: What is the approximate cost of the Crossfiler?

A: This is a very difficult question to answer. We have a prototype model. Itek is studying the feasibility of manufacturing these and their estimate (and I quote this as their estimate) is that it will cost between $15,000 and $25,000. I think they hope to have this price come down.

Q: Does the Crossfiler perform only one function?

A: It performs only this one function, plus one or two other minor additional functions. It's not difficult to explain or justify. What we wanted, actually, was a piece of equipment which would allow us to have the in-house capability. Computer Centers are notorious for knocking off time for libraries or getting down time. Our experience shows that when we were promised ten hours of computer time, it wasn't prime time. It was usually at 2:00 in the morning, or it was delayed for six months. In this particular application, since we had to maintain continuity of catalogs, we wanted a piece of equipment that would automatically produce our catalog cards for us. This may seem expensive to the gentleman who asked the cost of our crossfiler. $20,000 or $25,000 is quite expensive. In our application, now, the figures I quoted you for machine-produced-Crossfiler produced cards include machine cost and depreciation.

Q: Did you make a time-study on this?

A: Yes. We did a very thorough study on that actually and found that the amount of time it would take the attendant's time, the clerical time, would more than offset the cost of buying a machine of this sort. In this application, all routines are automatically unattended.

Q: You could do the same work with a tape typewriter.

A: Yes, but this requires the attention of a tape typist at all times, and this is the significant factor.

Q: Have you seen this in operation? A counter can be attached to the typewriter.

A: Yes, I agree with you that this is a very efficient way of doing it, and Johnson - well, at State Library in California - well, I saw his system - it was quite interesting. The point that I'm trying to make is that the differential in terms of - well, having the typewriter attended or unattended was significant enough in our application to warrant paying - well, we didn't actually pay for the machine - it was part of the study and it was actually delivered to us as part of the contract.

Q: Do you batch your work?

A: Yes, we batch all of our work in groups of 25 to 100. We then process it on the Crossfiler. It does this in a half hour or an hour, and then we automatically load this tape on to a typewriter and it goes unattended. We have one input processor who does both input and all the processing. All of

these operations I'd like to stress again are unattended and automatic. This is where the savings actually accrue.

Q: Do you have a copy of your talk?

A: No, actually there is an article in Library Resources on Technical Services which represents a technical report I wrote for Itek. Copies of this particular paper aren't available, but I'm sure that we can reproduce it if anyone is interested. We can send it to you.

USE OF TERMATREX FOR INFORMATION RETRIEVAL

by

Lt. Col. Frank G. Favorite
Armed Forces Pest Control Board

I usually manage to be a very controversial person. I thank these people who have gone ahead of me. Not only have they cut down the time, but I am sure if I had enough time, I could be thoroughly disliked in this group. I think perhaps I can accomplish it anyhow.

We think that the word "librarian" is a dirty word. The reason that we came into existence is because the library and the librarian couldn't render us a service. Now, what service did we need? Number one, I'm not a librarian; I'm not a library scientist or whatever the terms are that you have today. I am a biological scientist, and I work with biological scientists. Our system has been devised by biological scientists. It is operated by biological scientists for biological scientists. Nobody else can do this for us.

Believe me, we have all had - at least in my age group - twenty years of experience with the library in trying to get information out of the library. Information is not forthcoming. Bibliographic citations and a lot of cooperation are forthcoming, but this is not enough.

In order for any specialized scientific group to retrieve information, he must deal with the people who know what he is talking about in depth. Now I am not sure that I understood Mrs. Sievers correctly. If I misquote her, perhaps you will correct me. I think she said something about the success of the computers in information retrieval. To my knowledge, there are no computers - digital, analog, or otherwise - that have been successful in information retrieval. They just don't exist. They may never exist.

Our problem, and the reason that we came into being - and I think here I should use an example.

If someone at the Secretary of Defense level wanted to know whether or not our troops would face a health hazard from Rift Valley Fever in Sierra Leone, what creature transmitted Rift Valley Fever, when did it occur seasonally, and what can we do about controlling it, there is no library system in the world, to my knowledge, that can come up with these answers. One must depend on an information system, if you will, that has had an input of this type of information, with a faint hope of retrieving it.

This, then, and similar problems, were the reasons that our Information Center came into being. I think that Mr. Lyman has defined the ball park, we are a Department of Defense Board under the Secretary of Defense for Health and Medical. We are responsive to this group. We are responsive to approximately 500 specialized biological scientists within the military program, and we are responsive to the administrators - who are deciding upon research projects, how much money did we spend for a given effort.

We studied various systems - computers, card files, optical coincidence, so-called non-conventional systems - that we thought might stand a chance of handling our information, and at this point, let me get myself clear of any five percent sort of relationship. Termatrex is a trade name, and I do not sell Termatrex. I own no stock in the Jonker Business Machine Company. Perhaps a little better title here would have been, "Use of Optical Coincidence for Information Retrieval." Termatrex happens to be a very neat application of optical coincidence. How many here are familiar with optical coincidence? How many are familiar with the Jonker Business Machines application of optical coincidence? Some of you will find this very boring. I should hope that the rest of you who have not seen Termatrex in its application will find some interest here, see how we use it, the cost of its operation, and the extent of our service. Again, in the interest of time and your coffee, which I know that you would sorely miss and dislike me all the more, let me get to my slides.

Any of the information systems (can you hear me when I turn like this?) we have found must operate on some sort of a language. Ours is very similar to the Defense Documentation Center's thesaurus. They call ours a micro-thesaurus. We do depth indexing into the field of medical entomology, if you will. This concerns the diseases that are transmitted to man by various arthropod vectors. Also, we deal with the chemicals and some of the other features of medical entomology. This is how we keep our thesaurus. This is its master on an Acme visible set-up. We can add, subtract, change, and then we run off copies of this on a Xerox, and when we have too many changes, we just up-date it.

Here is a master file set-up on the Termatrex. It is obviously color-coded and tab-coded so that it is a completely random system. This is a master from which we generate cards for the active system. This is the active system and, while a little jumbled here, you can see the intermixture of colors and tabs, and with just a few hours experience, one is able to reach back into the index and pull out Green 33, Blue 57, or what

have you. Each of these cards is captioned with a descriptor from our thesaurus so that by picking out a series of these and superimposing them, of course, we can read out the information that we want.

This is to be an example, then, of how we would handle a piece of information. We would assign the document a serial number. The professionals involved in the system would do some handwriting of the information that appears within the article. The red normally is completed by a clerical person within the system. We assign our keywords and generate a small summary or an expanded title, or a brief of the material. From this, the information is typed onto a form which we devised. Simultaneously, this information is put into a coded tape. There must have been a reason for this. I haven't looked at these slides for awhile.

This is showing the use of three different cards with their keywords that were extracted from the article. This is how the document's number is placed into the Termatrex cards. All of the cards are superimposed, one over the other, in this drill, and the document number, which I think on that particular example, was 2155, would be drilled through all of the cards representing the keywords extracted from the text of that article. This shows another view of the drill - its about a 1200 dollar item, for those who are interested in dollars and cents. It has underlighting. This happens to be a master card on top which is used to overlay all the cards which are drilling so that you can see how many items that you have in your system.

This is the Smith-Corona Marchant Typetronic 2215 which is a little slightly different version of the Friden Flexowriter, if you are familiar with this particular one. This is an electronic machine dealing with photoelectrical reading, rather than the electro-mechanical. It is a little higher speed machine than the Friden Flexowriter, but it has just as many problems as the Friden.

Here is a view showing how we file our master cards. The master card is on the right. This goes into a sequential file, and the edge-punched card we have generated is also filed sequentially.

Ever so often we gather our edge-punched cards. These cards must be gathered in units of ten, and we generate a continuous tape. This gives us fire storage and insurance. As a matter of fact, if we had any damage to our system, this is kept in a separate location and we could, by reading it back to the reader, regenerate our entire system without a serious loss. Also, we would collect information by subject, by author, or by any other logic that we wish and generate a continuous tape then it would be a simple matter to update this information from the date that we cut it off.

This is our operant output running the continuous tape through the reader which you see just about center forward. The output is on a carbonous transfer paper which we find very convenient, and cuts down on

our internal paper work. One copy goes to the user and one copy is maintained in a user file.

This is the type of information that we put out. Unfortunately, on this particular example, it doesn't show any of the summary type information which we frequently generate on our information documents. This is rather straight-forward, with the author and the accession number appearing in the left-hand column, the title of the article in the center, and the source of the information on the right. The double slash which you see finally, after the item in the right-hand column, would be where our summary would pick up and go ahead if we had one to add to this. This, then, gets into the reversal of our input where we would retrieve, a demand would be put on our system in the form of a telephone query or a letter.

DISCUSSION

Q: How many documents do you have in your system?

A: We now have in the neighborhood of 3800 or 3900 documents in our system.

Q: How many documents can you handle?

A: We think that we should be able to average somewhere around 5000 documents a year in depth.

Q: How many people do you have doing simultaneous searches? A couple of dozen?

A: Not even one dozen. You might be able to have two people doing simultaneous searches.

Q: How many people are working on your retrieval program?

A: We have three professionals and three administratives.

Q: What libraries have you been dealing with where you were unable to get the information you needed?

A: In the libraries with which we have been dealing? Oh, we've dealt with all sorts of libraries. I don't wish to point out any single one. Now, granted, if you had 300 percent increase in personnel in your average libraries, you'd be able to do just that much more, but apparently, no one's interested in supporting libraries to this extent. Apparently, I mean, they all have the same problem. You try to get another ten thousand dollars for the library-you've got a big problem.

Q: There are libraries which are well-supported financially.

A: Each organization has just so many dollars, and they can spread it just so many different ways, and the library doesn't get perhaps enough

to do what they want to do. But this is a self-limiting factor. The dollars have to go somewhere.

Q: What do you do if they want information that isn't in your system?

A: We'd tell them to go somewhere else. We would probably, if they were trying to retrieve information that had no relationship to our system - shall we suppose that the information should be in our system?

Q: Yes. I should think that you would sometimes have to go to an outside source for your material.

A: That is quite true, and in many cases we run into this, and we would hope, of course, that our need to go to other sources would gradually taper off with the increase of information in our own system. Also, when someone comes to our system now, and tries to retrieve information, not only are we depending to a certain extent on the system, but we're also depending on the sixty years of experience factor that we have in the three professionals who are involved in this system. This triggers the accumulation of information from other sources without the system itself, so one just has to accept this and, of course, this factor would not exist in the library.

Q: Most libraries cannot spend the time required for depth indexing.

A: That is correct. Of course our's is an inverse system, and we can retrieve in depth. We can retrieve just as deep as we put it in. The average library - even a technical library - will not go to the depth of indexing that we would go in an information system because fundamentally they are incapable of going to the depth of indexing. Let's see. You can take ASTIA's thesaurus, as a matter of fact. The lowest term in ASTIA's thesaurus of descriptors is our highest term.

Q: Doesn't this type of depth indexing narrow your search?

A: This is true, except that you are already clued to your information by your descriptors since these have been very carefully selected in depth so that we do narrow our search down and we know that the information that we want is truly in this document, rather than having a bibliographic citation to a document where the information might or might not be, and you are forced to read the entire document to determine whether or not that information is there.

Q: Why have you not gone to a computer?

A: Cost, principally cost. We may well go to a computer in about five years but we felt that we had to have this experience first, to see whether it was going to work before we dare commit ourselves to a computer.

Q: How do you get information into your system?

A: We have several different standard ways of getting information into our system. Number one, we do subscribe to many of the journals - the American journals - from which we extract our information. We also subscribe to several of the abstracting journals, key to our particular field. We also have availability of DDC's document input for the unpublished literature. We also get biological abstracts, and basic, and all these other things, although we do not use them too much. They're too far behind.

USE OF THE FLEXOWRITER FOR PRODUCING THE NOL ACCESSION LISTS

by

Charlotte Mullinix
U. S. Naval Ordnance Laboratory
White Oak, Maryland

Good morning. As Mr. Lyman has told you, I am going to talk to you on the use of the Flexowriter in producing our NOL Accession List.

The Catalog Branch of the Naval Ordnance Laboratory is responsible for producing the weekly accession lists of reports received in the Library. These lists are issued in two security categories: "confidential: and"confidential limited". Both lists are made of two parts: the first consisting of NOL-originated reports retained in the Library as part of its permanent collection, and the second consisting of reports currently received which may or may not be retained as part of the permanent collection. The lists are arranged alphabetically by subject and by number under each subject.

When incoming reports are received in the Catalog Branch, they are divided into the groups previously mentioned: those immediately placed in the permanent collection and those which are cataloged on a temporary basis, to be evaluated by Laboratory personnel for permanent retention or discard. Different procedures are used in handling these two types of reports. I shall explain.

The first group of reports, those which are retained in the permanent collection, are given to a cataloger, who keeps only one copy of each report, and sends all others to the circulation area. The cataloger then subject-indexes and codes the report for the IBM 7090 machine. He then

assigns a general subject heading to each report, according to an established list of headings. This subject and the total number of copies for each report are written on a 3x5 slip stapled to the report.

The report is then given to a library assistant who types complete descriptive cataloging on the Friden Flexowriter, on a 3x5 fanfold. A fanfold is used so that these temporary slips can be immediately filed into the card catalog. At the time the library assistant types the descriptive cataloging, the Flexowriter punches a paper tape with the same information. This tape will later be used to reproduce the weekly assession list.

These tapes are filed first by subject and then under each subject by daily sequence (which results in filing by accession number). At the end of each week, these punched tapes are inserted into the Flexowriter and the machine automatically types the accession lists on paper mats for reproduction.

These mats are revised and corrected and then sent to the NOL Photographic Division, and from them the Photographic Division reproduces the accession lists and from the same mats the Photographic Division produces our permanent catalog cards. Both the accession lists and catalog cards are returned to the Library within five days.

The accession lists are then mailed to personnel and government installations, in accordance with the distribution list maintained by the Catalog Branch.

The second group of reports - those retained on a temporary basis - are handled under a different procedure. These are first given to a cataloger, who briefly scans each report and assigns general subject headings. The reports are then assigned an accession number. Again, a library assistant types complete descriptive cataloging on a fanfold, using the Flexowriter. The Flexowriter produces a paper tape, which in turn types the weekly accession lists for the Photographic Division to reproduce. This section of the accession list is produced in exactly the same way as the permanent section. But the Photographic Division does not reproduce permanent cards for these reports, since they are cataloged on a temporary basis.

After the tapes for this second group of reports have been used for the accession lists, they are filed in the Catalog Branch in order by daily sequence and then alphabetically by subject.

These tapes are again used when and if the reports are returned from the circulation area, evaluated for permanent retention in the Library. At this time, the date of reception of the reports are matched with the date of the tapes and the corresponding descriptive cataloging is reproduced from the tapes by the Flexowriter. Also coding of reports for IBM information retrieval is done at this time.

This descriptive cataloging can be typed by the Flexowriter on paper mats which in turn will be sent to the Photographic Division for

reproduction of permanent cards, or the Flexowriter can reproduce the catalog cards on permanent card stock. This second step is seldom used in the Catalog Branch because of the time element.

The tapes are eventually destroyed for those reports which do not become a part of the Library's permanent collection.

After permanent cards have been made, the tapes are destroyed. Tapes for all other reports - those evaluated as not worth keeping, and those not scanned by Laboratory personnel - are eventually destroyed. At this time, also, the reports and corresponding fanfolds are destroyed in accordance with Security regulations.

USE OF THE FLEXOWRITER IN THE PREPARATION OF CATALOG AND INDEX CARDS

Alice M. Amoss
Chemical Research and Development Laboratories
Edgewood Arsenal, Md.

Mr. Lyman's introduction was very kind.

I began in 1918, so I know I am a senior member of this party, but I am going to warn you that my paper is going to probably be the most elementary paper that you hear at these meetings.

I must make an apology. Miss Liberman called me up and asked me to speak on this subject. My response was that I felt the majority of our special librarians were so familiar with the Flexowriter and all its possibilities that it would be just like bringing coals to Newcastle (that old saying) if I stood up here and talked about it, but she said possibly there may be one or two in the group who did not know about some of the uses to which a Flexowriter may be put.

I did not bring a picture of the Flexowriter, but I am glad the former speaker did. May I ask how many are using Flexowriters now? The majority, I imagine, are.

The Flexowriter, as my cataloger describes it, is nothing more or less than a glorified typewriter. Now, let me go on with my talk. It is really so similar to the one that was given before in many ways. I will have to do something to make it interesting.

My little paper could well be placed in Special Libraries under the title, This Works for Us, because that is just about what it is.

We have had a technical library (formerly called a chemical library) at Edgewood Arsenal since the end of World War I. We gathered all the research reports that were written during that War and a few books - I think there were 27 in all that were left - and began a library.

As time went on, we found, as all of you find, that we had more work than we could possibly handle with our staff, so we had to continually look for shortcuts. This is what I am going to talk about.

At the Arsenal, we have undergone reorganizations, as I am sure anyone working in the Department of Defense (or previously, War Department) would know. They combine, then they separate, and then combine and then separate, so that sometimes there was one library and then there were two libraries - a medical library and a technical library. In the late 50's or middle 50's, it was decided to combine them again, making one library - the medical library - which serves the biologists, the pharmacologists, and all the PhDs in those fields. I can appreciate some of the remarks the Colonel made this morning about the demands that those people make on the library.

They consolidated the medical library with our technical library. This consolidation, together with the establishment of a new library section, and shortly a Nuclear Defense Laboratory was built in another section of the Arsenal, created problems. These people also wanted a library. Although the libraries were combined administratively and to some extent physically, we kept the books pertaining to each of the three fields in the locations where they were most used - the medical group with the medical laboratories, and the nuclear people had their own books. However, there was a great deal of overlapping in both books and reports.

I might add that we are now contracting out our reports to have them placed on cards and, eventually, we will go into full mechanization. The J. I. Thompson Company in Washington is handling it, and they are indexing some reports completely, but only a very few.

To some of the librarians here who remember that we used to call them subject headings and then descriptors, links, roles, and what-not, it is interesting to know that the worksheets we kept are index notes of all the indexing that we have done since 1918. They are now being pulled out, after many battles as to whether we should keep them or throw them away, and are being used for this mechanization contract because they have all the subject headings there. The contractor does not have to do as much work. To get back to my subject, until this is fully mechanized, we will continue to do our indexing by conventional methods.

Plans were made to have all acquisition and processing centralized in the original Technical Library. This, of course, included the cataloging of books and miscellaneous publications and the indexing of reports. The indexing of reports by the library staff has followed conventional methods - selection of many subject headings after a careful review of the entire report and the typing of 3x5 index cards. We used bond

paper (100% rag for durability) and, with a good grade of carbon paper, a typist could make 4 - 5 legible copies of cards. Some of our cards date back to 1918 and are still satisfactory, although they had had hard usage. When the number of subject cards exceeded a reasonable number (about 3 typings per report) we sent a master copy to our local printer. This, however, caused delays, especially if the printer had priority jobs.

After the consolidation, we had three widely separated library sections, each of which needed card catalogs of books and indexes of reports. Since we made generous analytics for books and gave our reports what is now called deep indexing, a problem confronted us - therefore, the Flexowriter.

The Flexowriter had been demonstrated at a local Special Libraries meeting as a machine which would reproduce endless copies after the master copy was put on tape.

To meet our needs, however, we had the keyboard changed to meet specific library routines. I have several copies of a chart which indicates the keys we have changed to meet the requests of my cataloger. These changes included diacritical marks, etc.

The demonstration of the Flexowriter showed that, once the tape was made, the machine could be set to begin reproduction - continuously until the required number of copies were counted and the machine was stopped by the operator.

I could not agree to this procedure which required constant attendance of a baby sitter and insisted that the Flexowriter people attach some device which would automatically stop the machine after a definite number of copies were made. At that time, the local representatives of the Company replied that they had no such device.

In this age of automatic devices of all kinds - doors opening, counting for all purposes, levers that work by themselves - I could not accept the Company's reply. After some searching, I heard of Mr. Joseph P. Popecki in the Catholic University and, through his suggestion, I found the Productimeter made by the Durant Manufacturing Company.

We purchased a Productimeter. Then we convinced the Flexowriter representative from the Friden Company that it could be attached to our machine.

Folded cards in both card stock and bond paper were purchased. As a result, we could make multiple cards for our library sections. If we had 30 entries for a report, we set our Flexowriter for 90 cards, thereby, in one operation, supplying three libraries with identical index cards.

The same unification is carried on for the book catalogs. After a master is typed on tape, we make as many sets of catalog cards as are

needed merely by setting the Productimeter for the number desired. When that number of cards has been prepared, the machine automatically stops typing.

By typing a continuous tape which covers a number of reports, we can have the machine operate for some time with no attention from the library staff and feel that perfect cards are being reproduced - cards which are as satisfactory in appearance as those which were formerly prepared by the printer.

It has been estimated that a clerical worker, of ordinary typing competence, can produce about 14,000 sets of cards per year at a minimum, working six hours per day, five days per week. This limitation is largely that of the operational time of the machine itself and not that of the typist who may be performing other operations while achieving this card production ability. It is even conceivable that a typist might operate another card production system, or that the system operate more than six hours per day.

If anyone is interested in the equipment that we purchased to be placed on the machine, I can give you information and the supplier, and the approximate prices. I have a list of the equipment. I also have a little chart I had my cataloger make for me which indicates keys that she has eliminated from the Flexowriter and the keys that she desired to add to it. And that works for us.

We are short of help. We never have enough typists to do the work. We receive anywhere from 10,000 to 15,000 reports a year. We destroy very few, that is, at the time. Most of the reports we receive are research reports which are needed almost permanently - and that really makes the workload.

For those who are not familiar with a Flexowriter, perhaps it might be beneficial to give a brief description of the machine and some of its uses.

The Flexowriter is a glorified typewriter, with many excellent advantages. It is possible to use an encoding tape to cut a master card. If an error is made on the card which you are typing, the tape can be corrected without involving erasures. This is a definite asset, since it means no erasure dust to harm the delicate mechanism.

The ends of the tape are sealed together with an adhesive to make it continuous. We use Gaylord's Magic-Mend liquid plastic adhesive because it dries almost instantly. The tape is then placed on the machine, and duplicate cards can be made from the tape. In other words, from typing a single card, which is cut on the tape, the operator can run as many cards as are needed, merely by pushing a button. All cards will be originals and there will be no worry about spacing, spelling, or typographical errors. This is especially rewarding on cards which have foreign languages or very technical terminology. It is equally as beneficial for information containing numbers or percentages.

The cards will be produced, in all probability, in much less than half the time a typist would use to complete the same number of cards - even assuming that she would not make mistakes.

The Flexowriter is unsurpassed for producing catalog cards, although it can be used in various ways on different sizes of paper. The important thing is to have a perfect copy of your material on tape, just as you want it to appear in final form.

The Flexowriter and table can be procured from Friden Company, Flexowriter Division, Rochester, New York, at an approximate cost of $3,000.00.

The CRDL Technical Library uses a Friden Flexowriter Programatic with a double case library keyboard. This means that we have keys for symbols or foreign accents which would be necessary in cataloging. There are many keyboards from which you may select the one which would best serve your purpose. If the selection is made at the time you order, there is very little, if any, extra charge for this service.

We use our machine exclusively for making cards. Therefore, we use a pin-feed platen made especially for 3 x 5 cards. This can be procured from Standard Register Company, Campbell and Albany Streets, Dayton 1, Ohio, at an approximate cost of $85.00.

We have the following optional equipment in use:

1. Productimeter (Model 4-SP-1-MF). This is a device which can count electrical impulses delivered by a microswitch, cumulate these to a given desired total, and at this matching point, turn off or on an electrical device. For our use, the Productimeter counts the carriage returns. Therefore, since there are 18 lines on the standard 3 x 5 card, we would have to set the Productimeter for 180 to make 10 cards. At any time, you can tell how many lines have been typed and also the number remaining to be done. The Flexowriter will stop when it has typed the number of lines which it is set to do. We keep a table of figures beside the machine at all times so that the operator can glance down to the number of cards which she wants typed and immediately tell what the setting of the Productimeter should be. This can be procured from Durant Manufacturing Company, Milwaukee, Wisconsin, at a approximate cost of $131.00.

2. Gates Acoustinet (Model IDP 200-2). This is a hood which fits over the Flexowriter and rests on the Flexowriter table. It deadens approximately one-half of the noise of the machine. It has a built-in electric light and a hinged plastic window through which you can observe the operation of the machine. There is space inside the hood for all necessary supplies. This can be procured from Friden Calculating Company, 3811 East Monument Street, Baltimore 5, Maryland, at an approximate cost of $284.00.

3. Refold Stand which delivers and refolds the continuous catalog card stock. This can be procured from Standard Register Company, Campbell and Albany Streets, Dayton 1, Ohio, at an approximate cost of $110.00.

The following supplies are used regularly:

1. Friden Encoding Tape (Pink). This can be procured from Friden Company, Flexowriter Division, Rochester, New York, at an approximate cost of less than $1.00 per roll.

2. For cards for the book catalog, we use a heavy bond 3 x 5 paper with a pin-feed edge, continuous card stock, with a hole at the bottom of each card for the drawer rod. Cards are "burst" down to 3 x 5 size by breaking off perforated pin-feed edges and removing one after another from the string along the perforation. This can be procured from Standard Register, Campbell and Albany Streets, Dayton 1, Ohio, at an approximate cost of $4.70 per thousand.

3. For cards for pamphlets, Government publications, etc., we use 3 x 5 blank cards, continuous form, with marginal hole punching, 100% rag 20 lb. paper folded (no hole in bottom of card). This can be procured from Acme Visible Records, Inc., Suite 1305, Standard Oil Building, 501 St. Paul Place, Baltimore 2, Maryland, at an approximate cost of $10.75 per thousand.

In conjunction with the Flexowriter, we have an electric typewriter equipped with a line-finder attachment. This consists of a pin-feed platen combined with an automatic position finder (line on which heading will be typed). The line-finder is installed permanently on the typewriter, although it can be removed, if necessary. Both manual and electric line-finders are available. It can be set in seconds to designate proper position. Then, merely by pressing a button or pulling a lever, the cards (which are still attached, just as they come from the Flexowriter) automatically turn to the correct position to type subject headings, etc. This can be procured from Standard Register Company, Campbell and Albany Streets, Dayton 1, Ohio, at an approximate cost of $270.00.

TYPED: REPRESENTS STANDARD KEYBOARD.

THE FLEXOWRITER KEYBOARD IS IDENTICAL EXCEPT FOR HANDWRITTEN CHANGES.

INFORMATION RETRIEVAL ON THE IBM 1401

Dr. Robert P. Rich
Director, University Computing Center
Applied Physics Laboratory
Johns Hopkins University

We in the Computing Center try to help a wide variety of different kinds of people - lately the people in our reference library and our reports library.

I am going to describe the results from the Computing Center's point of view for several reasons. One is that I am afraid if I try to describe it in library terms, I would demonstrate my ignorance. Another is that some of you may not have had a great deal of experience yet with Computing Centers, and I thought it might be helpful to give you that part of the picture.

There will therefore, I am sure, arise in your minds questions about the library aspects of the program I am about to describe. Fortunately, Mr. Kennedy, our Reports Office Librarian, is here this afternoon. I suspect he will be willing to help during the question period if any embarrassing questions arise.

The title of my talk is Information Retrieval on the 1401. This machine is typical of what we might call small computers or data processers. It is quite a slow, inexpensive machine as machines go these days. The configuration that we are using rents for about $8,000 a month, or, with operator, about a dollar a minute.

Information retrieval, it seems to me, consists of two black boxes, one which has a question and one which has an answer. These two boxes have to be put into communication with one another so that the fellow who has the que .tion can go to the one who, he hopes, has the answer; then, if the system is properly oiled, the answer comes back.

Information retrieval nowadays usually involves very large files - millions of documents, and hundreds of requests per day. There are a great many things going on and one suspects that the amount of individual attention that

can be given to each request may not be very large. I think if we go back to essentials, however, we will see that information retrieval doesn't have to be as overwhelming as that.

If I run across a word in my reading, for example, and I am not sure of either the pronunciation or the meaning of it, I reach out to the top of my desk and pull out a dictionary. I look up the pronunciation and/or the meaning of the word. I close the dictionary and put it back. That is information retrieval.

Occasionally, if I am reading something in a foreign language that I have had a number of years to forget, I wonder what such and such a word means. I pick up the phone and call either the library, where they have dictionaries, or somebody who speaks the language better than I. I say, "Look, what does this word mean in this context?" and he says, "Well, why don't you try this?". That is information retrieval again.

That, however, is not the part of the problem that you people are principally interested in. There is a tendency, I think, for librarians to think of themselves mostly on the answering side and the rest of the world, like us Mathematicians, for instance, on the requesting side. On the other hand, anybody who spends a lot of time in libraries realizes that a librarian spends at least as much time on the request side as on the other. I am reinforced in this opinion by looking around the library. I see on the desk a great big fanfold gadget which contains a list of those copies of journals which the library actually possesses. I see a card catalog which purports to contain information about books in the collection. I see a shelf list, and I see people in the process of preparing bibliographies. It seems to me that to talk to librarians about information retrieval only as if they spent all their time on the answer side may be a little bit misleading. On the other hand, the librarian's main job <u>is</u> on the answer side. He or she ought to be able to supply information of certain kinds to people who come in and ask for information of those kinds.

We started a small R and D program at the Laboratory by saying, "What could we in the Computing Center do that would be within our resources (and those resources were very limited at the time) that would give a substantial amount of help to the librarian regardless of which side of the desk he was sitting on at the time." It seemed to us that what you really want is to be able to put information somewhere once and for all in such a way that you can then frequently thereafter ask questions and get answers.

Well, in computer parlance, what this means is that you want to establish one or more files into which you can put one or more different kinds of information and you want to have these files accessible to a computer program so that you can put questions to the files as time goes on.

Let me take a simple example. Suppose that you have a card catalog on 3 x 5 cards, and that you have one card for each of the authors, one for each of a number of subject headings, and other cards for other purposes, depending on how you run your library. Suppose that we take this card file as our basic

file and just put the cards into such a physical condition that a computer can read them in response to our questions and toss out to us the cards that would best answer whatever question it was we asked.

In other words, we start out with the usual information that is put on the 3 x 5 cards in the card catalog, namely, title, author, source, classification, date, and so forth, an abstract (if the poor over-worked cataloger has had a chance to get one on it), and various subject headings, or descriptors (specific terms which describe various aspects of the document).

It's clear that the computer is going to have to help the librarian carry out three distinct functions.

In the first place, we have to establish the file - in other words, we have to get these little 3 by 5 cards copied into some form that the computer can easily read; to be specific, I will use magnetic tape as this form. So, we have to have programming available which will let us put our information on magnetic tape, make corrections in the tape, add new cards to the tape as the need arises, and delete old ones as the need departs. The program which we call Edit does just that. It permits you to get information of any kind you want onto magnetic tape, except that you have to do your writing within the somewhat limited set of characters available.

We also provided a Print program which will take the information that was on the tape and put it on paper in a form which is easy for people to read.

Let's stop at this point. We can now put the information into a file and then print out that file. Let's see where that gets us in the library.

Well, one of the things I could do would be to put my shelf list on a tape and print it out and give copies to people.

In our Reference Library, for instance, 60% of the books are out on loan at any particular time so, although we have open stacks for the staff, that doesn't do me any good because there is only one chance in three that the book I want will be there.

On the other hand, if I had a shelf list and if I became reasonably familiar with the classifications being used, I could, back at my desk, browse at will through the stacks and I could see not only the books that were physically present there, but also the ones that weren't. Consequently, just with these two portions of the system, one could, for instance, make current shelf lists easily available, since updating these tapes is an economical operation. We can print from the computer printer directly on paper offset masters so that putting out monthly editions of the shelf list is an entirely feasible operation.

The way the program works, you make changes in an item if you want that item changed. If you don't change an item, it stays the same, and when the computer prints it out the next time, it will print it out exactly the same way as it did the last time. It will not introduce additional typographical errors which have to be ferreted out by an additional proofreading process.

In other words, using the computer as a clerk typist this way means that you can get the master file correct, character by character, and you can be sure that you don't introduce any additional typographical errors when you send it to the typist and when the typist sends it to the printer.

Now, it's true that the computer output isn't nearly as pretty as a good printer could give you. On the other hand, you can make sure that the characters you have in it are the characters you intended to have in it. There are times, and it seems to me library work is one of them, when it is much more important to have the stuff correct than it is to have it pretty. This is, of course, a matter of opinion and I won't argue with you.

This use of the computer as a clerk typist for large documents that have to be updated frequently is convenient and economical for shelf lists, lists of serial holdings, special bibliographies, etc. I am sure that out of your own experience, you can think of a number of other ways where a reliable, easy to use and reasonably economical clerk typist could help you.

And remember, I still haven't said anything about searching these files. I would be short-changing you if I didn't go on and say something about that. In addition to the Edit and Print programs, we also have a Search program, and I want to say just a few preliminary words about that.

There are two essentially different ways of setting up a file for information retrieval, as I am sure all of you are aware. One is to put in one place in the file all the information about a particular document and this is what we call a DIRECT FILE. The other way is to put in one place on the tape identifications of all those documents that are about a particular subject or that fall under a particular descriptor and this I call an INDIRECT FILE. Our system is based on the direct file - to put together in one place on the tape the information you want about a document. This information has to include, in addition to the abstract and the bibliographic information, a list of descriptors in terms of which you want to state your searches.

We passed out, as you came in, a sample output of a search. You will notice that the first items starts out with an accession number, 88048, and is unclassified. Then follows the bibliographic information. Then, you will notice a whole string of words separated by slashes, and following that is a short abstract. The format of the second report is substantially the same. You know better than I about what bibliographic information you want in your file and what kind of information your customers want in an abstract, so I won't say anything about those parts of the record.

I'd like to talk a little bit, however, about the string of words which are separated with slashes instead of being separated by spaces. I will use for each of those descriptive terms the word "descriptor".

A descriptor, as far as the computer is concerned, consists of a slash and another slash, and a string of characters in between. These characters in between had better not be slashes or else it will look like two descriptors instead of one. They'd better not be dollar signs, because we reserve that

character for our own use. But any other characters that you want to put in there, you may. For example, you can put in four digits and think of it as a date. You can put in just ordinary letters and write out words like "transit time", "crystal growth", and so forth, or you can code things if you want to. For instance, you may get sick of writing out "unclassified" all the time and decide, "Well, I'll just use the letter 'U' for that." Or you may get sick of writing out "Annual Progress Report" all the time and you'll decide that you'll code that "APR" as done in the first document, or "Quarterly Progress Report", "QPR" in the second.

The procedure by which information gets on the tape is one that I don't want to spend too much time on because previous speakers have touched upon its various aspects. Obviously somebody has to take the report in hand and decide what string of characters is going to constitute its record. Somebody else has to take the output of this result and get it keypunched and then, using the Edit program, get it on the tape. That tape, then, if you're conscientious, ought to be listed and proofread and any corrections made, and this process continued until you're sure that what's there is substantially correct: the work "substantially" being interpreted in terms of your own conscience.

Once you have the records correct on the tape, you are in a position to write a search. I have to say, then, just a little bit about how the searches are described. Everybody seems to agree that you would like to be able to form certain logical combinations of the descriptors and you would like to be able to select those reports that were published between two dates and various things of this sort. Hence you would like to have a reasonably flexible language, probably looking quite a bit like symbolic logic, for combining your descriptors.

Since we were working on a small machine with only a small amount of programmer effort available, we decided to simplify the problem by using Polish Prefix Notation. In this notation the operator is written ahead of its two operands instead of between them, so that we would write, for example, +35 instead of 3+5 for addition.

Lukaciewitz pointed out (about 1935) that when this is done it is not necessary to use parentheses to show the order of operations.

The prefix notation will seem strange to you at first, but experience has shown that about half an hour's practice overcomes the strangeness.

For the operators we use a dollar sign followed by a single letter-

$A for "and"
$Ø for "or"
$N for "not".

Thus the phrase "large and black" would be written

$A/large/black/

for example.

We also included three operators which permit numerical comparisons -

$L for "less than or equal"

$G for "greater than or equal"

$E for "equal".

Each of these operators works on a pair of descriptors, the indicated comparison being made on the left member of the pair.

Suppose, for instance, that the date of each report is given as the four digits of the year followed by the descriptor /YEAR/. Then the term

$L/1962/YEAR/

would select all the reports published in 1962 or earlier.

These comparative operators can be combined by "and", "or", or "not" just as if they were single descriptors, so that

AG/1955/YEAR$L/1962/YEAR/

would select all reports published from 1955 to 1962, both inclusive.

The Search program accepts a search request written in this notation, checks each record of the file against the search request, and copies out verbatim onto another tape those records that satisfy it.

This tape may then be listed by the Print program to provide the search results in readable form, or may be searched again by a more restrictive search request if the first request gave too many hits.

This simple package of programs - Edit, Print, and Search - on a small computer has proved to us that mechanized information handling in the library does not have to be either complicated or expensive in order to be useful.

DISCUSSION

Q: Couldn't you have the same system without a computer?

A: A machine can't do anything that enough people, given enough time, couldn't do better. The point is that a machine will read very carefully through each of your items. It won't overlook any because it gets tired or bored, and it won't make any mistakes if your file is correct and it will do it faster and cheaper.

Q: I didn't understand, how searches are done?

A: Maybe I didn'tmake it clear. This thingamajig that we passed out is the first sheet of the print-out which is given to the requestor. In other words, I put in a request through the system. What I get back is the information that I would have pulled from the card catalog if I had been able to find it in the card catalog. Now, this is exactly the information that I as a requestor want. O.K. I want to know, yes, there are in fact reports on this subject. The subject is up at the top here, incidently. We may just take a look at that. Dr. Stone wanted information about thin film in the adjective-noun relationship so that the equal sign is used, and he wanted only the unclassified ones, so that this is his search. This particular search, I am informed, for unclassified reports on thin films netted, out of the 3,000 reports that are now on the master tape, eleven hits of which only the first two were shown here because they fit on the tape.

Q: How much time do you have on the computer? How many minutes a day?

A: It wouldn't be in terms of minutes if we did it this way; the reason being, this is, you will remember, not a production system as I started out by saying. The library people have to take their turn on the 1401 along with all the other users, and, typically, it will be an overnight operation.

Q: Do you have a catalog approach to your reports?

A: I started out by saying that information retrieval consists of starting out from where you are, and getting in the most efficient way to where you want to be. Now, in our Technical Reports Office, too, if I know the accession number, I can get it in a hurry. If I know the corporate author, and there aren't too many reports by that corporate author, I can get it in a hurry. If I get it by one of their main subject headings, the ones that are listed on their regular 3 x 5 cards, I can get it in a hurry.

Q: We would want to maintain a card catalog. Do you recommend maintaining a card catalog file?

A: This is the point I tried to emphasize during the first ten minutes of my talk, that you get asked different kinds of questions in your collection. I would personally be very surprised if any one file, or any one mechanism turned out to give you the best way of answering all of those questions. In other words, I'm agreeing with you. I think you want a number of different files if you have a number of very different kinds of questions.

Q: Isn't there a time lapse in getting information to the scientist?

A: Not if you are willing to wait for the length of time that it takes to get on the computer and off. In other words, the advantage of taking the listings that I started out talking about is that a listing can be available. It can be at the man's desk. For instance, this same master file from which this was taken also fits Bob Lilly's Tabledex system and we can Tabledex this file periodically and just give people the Tabledex print-outs that they can keep at their desk. I'm not trying to sell any particular approach - especially this one. All I am really trying to say is that there are a number of different approaches - that what we have done here, I think, is to give a programming passage for a particular computer that turns out to be quite convenient regardless c which of those approaches you in fact want to try.

Q: How do you decide on which descriptors to use?

A: The way I would get around it is - and this is what any practicing cataloger does all the time - you decide to use terms in either a wider or a narrower scope that the natural language would itself indicate. QK. so, in your glossary or thesaurus you would have scope notes that say - use silver coating if you mean it this way, use silver coatings or silver if you want something else.

Q: This is not the way subject headings are used in cataloging.

A: Remember, I am speaking for the computer program. The difficulties of cataloging I just can't get into, I wouldn't want to, even if I knew anything about it.

Q: I don't believe this system would work in our library.

A: Well, remember, I stood up here to describe a set of computing programs which could be used in a wide variety of different applications, and it fact ours is.

Q: Can you give me an example of a different use of your programs?

A: They are using them, for instance to do information retrieval on patients over at the hospital. They want to be able to pull out the ones that became sick while they were in the hospital of something they didn't have when they got there. They are using exactly this same program. They choose their own descriptors, and whether they control their terms or not, I don't know. As far as Mr. Kennedy's application is concerned, he gets terms into his thesaurus from whencesoever. O.K. in other words, as he is cataloging, he needs a new term. He is free then to put it in the thesaurus. Once it is in the thesaurus and its scope has been defined, it is then controlled.

Q: A person could ignore the scope notes.

A: That is correct. For instance, Fenton was pointing out to me either this morning or yesterday that the word "Echo" is used only for sonar echoes; it is not used for radar reflection. But this is a matter which is out of my bailiwick. In other words, I give this fellow a hammer. If he wants to smash his thumb instead of driving a nail, I'm sorry. I'll give him a Bandaid and that is all I can do. Is everybody sick of this now?

Q: Do you have a paper on your computer program?

A: Well, what I was going to do was to end up by saying we do have an internal memo which is available to all of you - or to each of you upon request which describes the details of this. I felt that in the short time I had and after the big lunch you had, probably going into too much detail wasn't appropriate, but you can get copies of this memo if you want detail; and of course, the programs themselves are available to anybody who can make use of them.

Q: To whom do we write?

A: My name is Robert Rich - R-I-C-H

Q: How do we identify the internal memo?

A: BCC-294 - Baker, Charley, Charley, 294. You can get to me via the Applied Physics Laboratory, 8621 Georgia Avenue, Silver Spring, Maryland.

Q: How do we get copies of the computer program?

A: Same way. What I would suggest is that you have the programmer who is going to use it or the machine operator write so in case there is any question about do we have this or that programming feature, we can get it ironed out.

Q: How would you show the difference between an adjective and a noun?

A: Oh, it gets a little bit messy. One of the ways we could do it if I wanted to and this is not the application out at the Lab would be to put in quantitative or qualitative descriptors. In other words, I say, O.K., black cow is one of my terms. I would use that as my noun. Then I could use a qualitative or quantitative adjective which could be just a digit or more, right? So I say: 1/Black Cow/ That means there is just one word. If I put: 9/Black Cow/ that means there are nine words. The computing program would let you do it, but I shudder at the thought of cataloging that way. As I say, the programs would permit you to do this if you are willing to put in the extra time when you catalog the document.

Q: For reference purposes it is important to know how much material the report has on a certain descriptor.

A: Well, I would be inclined to put that sort of thing in the abstract if I were doing it, or, another thing you could do - and again this is not being done at APL - I've often felt that information retrieval really means that you have to have a number of these entries for certain documents. Right? Then, you can have one for what this document says about black cows and that can have a descriptor that says there is only a little bit, and another entry that looks just like this except it has what it has about white horses. But again, this is more work for the cataloger. I don't know whether it is worth it or not.

Q: What type of computer are you using?

A: This is an AK-1401. The Edit Program - well, Search and Edit both, require two tape units. If you want to be able to merge two old tapes upon the new one, you have to have three. The minimum is two tapes; three is much better. Our machines do have essentially all of the special programming features - high, low, equals and compare, multiply and divide, although that is not used as far as I know. We do have versions of each of these which will run on a 4-K. They won't run as well, and you can't have as long records and so forth, but again we are willing to dicker with your programmers. If they want symbolic decks and change them to fit your equipment, we'll help them do that.

THE FIRST YEAR IN PERSPECTIVE

by

Walter M. Carlson
Director of Technical Information
Department of Defense

There was no difficulty whatsoever in deciding upon the theme for my remarks this evening. Anniversaries are nearly always pleasant to celebrate, and all of us who work for the Department of Defense can observe a first anniversary today. It was exactly one year ago, on 3 October 1962, that Deputy Secretary Gilpatric issued the memorandum that triggered the start of a formal DOD effort toward a fully coordinated Technical Information Program.

The year since Deputy Secretary Gilpatric's action has been a remarkable year in the field of technical information. A recital of merely the major events would keep us occupied here longer than you would wish me to talk. A discussion of actions now under study would consume an even longer time. However, I think you would all be more interested in hearing a discussion on how our libraries and librarians fit into the over-all DOD picture. With your indulgence, perhaps it will be possible to cover the high points of this first year, to comment on what lies ahead, and then to place the whole activity into a perspective that is meaningful for you.

In this context, it seems appropriate first to review basic objectives, organizational responsibilities, first principles, and priorities. These are the issues that determine the long-term trends. These are the considerations that acquire perspective in which day-to-day decisions can be truly meaningful.

Let us turn first to basic objectives. There can really be only one basic objective to our DOD scientific and technical information program. This is to improve the effectiveness of the DOD program in research, development, test, and evaluation. Putting it into your framework, it is the objective of providing a service that will help DOD's scientists, engineers, and managers do a better job. Ultimately, everything we do in our technical information programs must be measured against this one objective.

With respect to organization, some clear-cut decisions have been reached in the past year. Fundamentally, the DOD technical information programs are made up of decentralized operations for which a certain amount of central policy direction is being formulated as required. There is no single "Czar". There is no central committee making all the decisions and the information he needs to do his job is too variable, too poorly understood for operating controls to be anywhere other than the level where the people work. No one can tell a librarian how to work with the local technical staff; it is hard enough for them to communicate effectively as it is. This is why our libraries operate on a decentralized basis and why they will continue to operate on a decentralized basis.

First principles are generally a matter of personal credo, and it often happens that the personal convictions of a person in charge of an activity become reflected in the patterns of that activity. For this reason, I feel that you should know what I consider to be of greatest importance in the technical aspects of my job. There is no importance to be attached to the order of these items; they are all matters of first principle.

1. People communicate ideas in natural languages.

2. Documents are one thing; information contained in documents is something else, entirely different.

3. More money should be spent on input than output.

4. Modern information processing technology requires inverted indexing.

5. Users must specify the services supplied (or product or output).

My feelings on these matters are well-described in so many places now that there is no need to elaborate here.

Priorities are also essential, and they have been set during the past year. Our first attention has been given to that largest technical report library of them all, The Defense Documentation Center. We have done more than change its name from ASTIA. It has a new mission statement. Its operations have been subjected to detailed study. Its organizational location is under re-examination. It has moved, and a new mechanization program has been undertaken. And there is still much more to be done to improve DOD's handling of documents.

The handling of information is receiving the next priority attention. At least $10 million per year is now budgeted for specialized information centers in DOD, and we are concerned that there exist no well-defined guides to their birth, their care and feeding, or their burial. These guides are now being developed.

The R&D programs in the information sciences are next in line for priority attention. DOD is spending as much as NSF for R&D in readily identified information R&D activities, and we are probably spending several times as much for R&D on activities which are now related but which are not easily identified with the information sciences.

As you can see, the DOD libraries, journals, technical meetings, and primary production activities are considered to be operating sufficiently well that no priority attention is required at present. Similarly, we have not yet assigned a high priority to working with the other major technical programs in DOD such as the technical logistics data and information committee and the technical intelligence community.

And, of course, no review of the past year is meaningful unless we include the remarkable strides made by The Committee on Scientific Information (COSI) of the Federal Council for Science and Technology. The U.S. Government as a whole is alerted to the problems of handling documents and information, and DOD is playing a major role in this effort. The current Chairman of COSI is Lt. General Wm. J. Ely in DDR&E and the Executive Secretary is Mrs. Donna Spiegler who works in our office. If major problems arise affecting libraries serving scientists and engineers, you will find that COSI is well-geared to take on and resolve such problems.

I would like to turn now to some of the major plans that can affect the broad perspective of technical information programs.

Earlier this week, we announced the most far-reaching of our new plans - a comprehensive survey of how DOD technical people use information. We do not know. We must find out if the design of future information systems is to be meaningful. You may all have the chance to help in some aspect of this survey before we finish it about 16 months from now, and I hope that you give it all the assistance you can.

The Army is working on the comprehensive development of three or four new approaches to handling information, especially about chemicals. Their program is just getting under way. The Air Force has a meeting going on all this week in Dayton to come up with a similar comprehensive approach to its technical information problems. Each of these efforts is going to have a strong effect on how DOD serves its scientists and engineers with technical documents and technical information.

There can be no question that the real pay-off to DOD and therefore to the taxpayer will come from a fully coordinated program for handling technical data and information swiftly, accurately, and completely through successive phases of RDT&E into procurement, production, installation, operation, and maintenance with suitable feedback from each phase to the ones preceding it. The prediction is reasonable that more DOD time and money will be spent in packaging technical data and information for logistics purposes during the next 10 years than will be spent on all aspects of handling data and information for scientific purposes within DOD.

And as in the past year, the near future will see further action from COSI on a wide range of subjects requiring government-wide attention. I am sure, for example, that the mutual interests of all the departments and agencies will be served by a closer look at some of the problems facing the technical libraries of the government.

This leads me back to the broad perspective with respect to the role of libraries and librarians in this technical information business.

I would like to approach this subject in terms of the major trends I see emerging and in terms of the challenges that these trends have posed to all of us, but especially to librarians.

Trend No. 1 is the decline of the Technical Journal as an effective method of conveying promptly, scientific and technical information. Responsible observers have declared that the Technical Journal is dead and is merely lying about awaiting a decent burial. I agree with this observation on the basis of my contacts with engineering journals. The technical report literature is taking over the Journal's function, and the emphasis on handling technical reports is accelerating this trend.

Trend No. 2 is the explosive enrichment of our technical vocabulary with terms and concepts deriving from new discoveries in electronics, the physics of outer space, and many other fields. Our previous modes of vocabulary control for assisting storage and retrieval of documents are being overwhelmed by this sudden growth in technical terminology.

Trend No. 3 is the increasing recognition by top-level administrators that technical communication is an integral part of the technical work itself. No better indication of this can be found than President Kennedy's opening sentence in his foreword to the Weinberg report:

> "One of the major opportunities for enhancing the effectiveness of our national scientific and technical effort and the efficiency of government management of research and development lies in the improvement of our ability to communicate information about current research efforts and the results of past efforts."

Trend No. 4 is the rapidly growing segment of our scientists and engineers who are willing to extract, evaluate, and report to others the significance of results being turned out in their specialized fields. This recognition by top-notch technical people that they can profit by spending 10, 15, 20, or 25% of their time on information activities can have a profound effect on our nation's technical capability.

There are many more important trends to be discussed, and I am sure that each of you can make your own contribution to this list. There is one broad trend that I have heard expressed in different ways by many librarians to whom I've talked in the past year. I would state it this way:

Trend No. 5 is the declining importance of the technical library in the flow or communication of data and information between scientists and

engineers. I believe that such a trend does, in fact, exist. I believe that some of our libraries have accelerated the trend by their response to the basic challenges it has posed over the past decade or two.

In a talk I gave to the Washington Chapter of the Special Libraries Association last May, I suggested several ways that military librarians could evaluate their position relative to the over-all technical efforts of their parent organizations. I shall not repeat those suggestions here, because most of you have already seen or heard them. They should give, however, a fairly accurate picture of where you stand today in your approach to the people you serve.

Since May, a series of events has caused me to ponder more deeply the problems that are facing our DOD librarians. It is quite likely, for example, that the new standards for the librarian series being developed by the Civil Service Commission will fall considerably short of what our research librarians would like to see in the way of job classification schedules. Also, two proposals for high-level commissions or councils on libraries have provoked some rather strong feelings on the subject of what position DOD should take toward such proposals. Officially, the DOD position is negative at the present time.

As one result of my pondering on these problems, I recently wrote some comments to the Brookings Institution. These comments will undoubtedly be published some day along with a summary of a meeting held in June, and you might like to hear what they were in context with the remarks being made here this evening. In part, here is what I said about the role of research libraries and challenges to research libraries.

"The technical libraries and the librarians associated with them are fitting effectively into a rather clearly defined role within the broad pattern of scientific and technical information. This role is primarily archival and is mainly applied to published literature. Furthermore, this role has been chosen by the librarians for themselves in the face of many challenges.

The challenges to technical libraries have been building up over so many years, and the response to these challenges has been so passive that other approaches have been created to meet the challenges, outside of the traditional library approach.

Item: The unwillingness of the Federal libraries to accept technical reports as "published literature," subject to normal bibliographic control, has resulted in large, library-like document operations in DOD, AEC, and NASA.

Item: The insistence of librarians upon using ancient and outmoded concepts of subject classification in the face of rapidly developing interdisciplinary approaches to science and engineering has resulted in the independent development of storage and retrieval techniques for documents that are completely outside the scope of present-day library operations.

Item: The ingrained sense of cooperation among librarians, originally developed to expedite effective use of collections, has been misused (probably inadvertently) to unify resistance to demands for new types of services by technical people. This has resulted in gravitation of the over-all service to a lowest common denominator, a phenomenon of any non-competitive situation, and the consequent departure from the research libraries of many men and women having the strongest motivation toward change or having the best talents for bringing new services within the scope of the library operations."

One consequence of these comments is sure to be a careful examination of their validity. If they are not accurate, let us get the facts to set the record straight. If they are accurate, let us all get together to see what can be done about them across the board.

Whatever the outcome of the examination that lies ahead, there is not the slightest question in my mind that the technical libraries in DOD are providing a useful function and that they will remain an active part of our scientific and technical information program. There is no doubt in my mind that the military librarians serving the DOD community are individually and collectively dedicated to their jobs. There is no basis for panic in the streets over what the near future holds for you. I do beg of you that you observe yourselves in the perspective of the expanding technical information program that I have described; and that you critically study, evaluate and plan the future role you will play in this program.

This past year, starting with Deputy Secretary Gilpatric's memorandum, has provided a greater increase in the visibility of technical information efforts in DOD than has occurred in the past 15 years. This past year has brought about more specific decisions on the subject of Government programs for technical information than the past 5 to 7 years combined. This past year has mobilized clear lines of responsibility throughout DOD for seeing to it that sound technical information programs are conceived and carried out.

This is the climate in which you are meeting for your seventh annual workshop this week. It is a climate responsive to aggressive action. There is much to be done, and I fully believe that the people in this room have the experience, the understanding and the initiative to see that the military librarians play their part and share in the accomplishments that lie ahead.

Thank you very much for the opportunity to be here this evening.

ACQUISITION OF FOREIGN PUBLICATIONS

MR. LYMAN: Good morning. Last evening, Mr. Carlson delivered some harsh words. Judging from the attendance at this morning's session, we were not mortally wounded.

This morning's session will be given over to the subject of acquisition of foreign publications. Mr. Cook has recruited the speakers for this morning. I am going to turn the program over to him.

MR. COOK: I don't expect to have very much to do during this part of the program. I am the moderator of what we consider a panel. During this next period of the Decline and Fall of the Technical Library, I think we should still concern ourselves a little bit with the acquisition of the traditional type of library materials.

I think there are still library patrons who have a requirement for this type of material. There are the older ones who are used to using such materials. There are some of the other ones who are afraid they will become a little anemic by confining their diet just to the technical reports. And there is a third category of people whose desk drawers are filled with printouts of this material. They are somewhat like the little boy who went into the library and asked the librarian for a book about snakes and took it home to read it. When he brought it back, he told the librarian that this book had more about snakes than he wanted to know.

This morning we are going to concern ouselves with the acquisition of some of the traditional library materials that I am sure are used in libraries. After you have generated your instantaneous book order or procurement request, then the problem arises as to how you are going to acquire this material. Then the processing gets beyond the control of the library. We have four people here who are going to tell us a little bit about this area of acquisition of foreign publications.

Our first speaker is Mary Anglemyer, who is the librarian at the Military Assistance Institute. This is the academic activity located over at Arlington Towers. It is the place where people who are going overseas for Military Assistance Advisory Groups receive a certain amount of

training and background, so they have quite a collection of foreign publications.

ACQUISITION WITH LITTLE OR NO MONEY

by

Mary Anglemyer, Librarian
The Military Assistance Institute

During my working life, I have only twice encountered rich libraries. Since my experience covers more than a quarter of a century, and since I have heard similar tales from professional friends, I think we can safely conclude our syllogism with the statement that libraries don't have much money. But have you ever heard of a course in scrounging being a part of the library school curriculum? No? This being the case, it is an art that we have to acquire by experience. I guess I am somewhat of an expert in this field, and therefore I have been asked to join this panel. I hope I can offer a few suggestions which may be helpful.

Since the information we collect includes U. S. publications on foreign countries, and I assume you are also interested in this kind of material, I will broaden my topic to include these as well as foreign publications. To do this, I shall first describe my present library, then the kinds of material we have and how we acquire them.

The Military Assistance Institute is organized under the Department of Defense to provide orientation and training to officers of all the Armed Forces who are going to any of our 60 MAAGs or military aid missions. During their four weeks at our school, the officers study some general subjects such as communism, foreign relations, U. S. policy, human relations, etc., but the major portion of the course is the study of the countries to which they are going. Their study includes not only military information, but politics and government, economics, education, religion, family and social relationships, and the Library must have material on all these topics. Furthermore, these officers are only occasionally interested in historical material as background information. Their needs are for current information, and often in brief form, for their study time is limited.

I shall restrict my discussion to English language materials. Our officers, except those who have been to a language school, do not have sufficient facility to read foreign publications, and I assume that is also true of a great many of the people you are dealing with.

In addition to our having little money, there is another reason for the difficulty in obtaining materials on foreign countries which money

cannot cure. That is that many of these are not published by commercial publishers.

Obviously, any library must have some books. Our book collection is the smallest part of our holdings but it is improving. The selection process is complicated by the fact that books on foreign countries and books published abroad are frequently not listed nor reviewed in the usual bibliographic tools. This situation has changed for the better since our initial acquisitions in 1958. For example, we spent many hours, many words, and much paper trying to obtain a copy of People's War, People's Army. Since all the dealers and our usual sources for the unusual admitted they had been unable to establish commercial contacts with North Vietnam, we only got it through one of our friends who has a contact which naturally he does not disclose. Now it is published by Praeger. Many of our books we have obtained free or at little cost - in the latter category I, of course, first pay tribute to USBE and the Library of Congress gift and exchange collection. As to the latter, perhaps some of you are unaware that if you can properly identify yourselves as librarians you can go to that section and spend dusty but profitable hours in the selection of delicacies which you probably would not purchase or obtain otherwise. On one trip my assistant and I made, we filled two large boxes of tomes ranging from Part 1 of Vol. II of the treaty series which is out of print, to some North Korean documents, and a sexy novel on the Caribbean. Many other volumes in our library are obtained free through the generosity of the countries hosts to MAAG.

Probably the bulk of our collection consists of government documents and these, almost without exception, are available either gratis or on exchange. An institution like ours has an in, as most countries appreciate the MAP assistance they are getting. Several years ago, we established a connection through the foreign office with the National Central Library of Taiwan. In writing us that he had instructed the librarian to send us all the available publications in English on that country, the Minister wrote that all the publications they could print could not repay us for our military assistance.

In acquiring documents, there are three principal sources: (1) the Embassies, (2) the information services which are usually located in New York, and (3) the issuing agency in the country of origin. If you are just starting to collect this sort of material I would recommend writing first to #2 and then #1 and if you still have no luck, the foreign govenment. We actually get most of our material from the last, but this is because we set up these contacts some time ago. If you don't know anyone in the country, start with the information services; what they publish is not just tourist literature. As an example, we only recently established a MAAG in India and had just a few days' notice before the first students arrived. From the information service, we were able to get volumes covering everything from the government organization to social life and customs and the flow is still coming. A word of caution, however--in such a situation as Kashmir or Khao Phra Vihar, the documents you get will of course only, and violently, put forth that

country's claims, so I'm not sure it's worth collecting even from both sides--it's better to rely on less biased (perhaps) American news and periodical articles.

I have praised the foreign governments for their generosity in furnishing documents, and showed in many cases these were easily obtainable. I am sorry I cannot say the same for the U. S., particularly the Agency for International Development and the United States Information Agency, which prepare the most studies of this kind. Many of these are not generally available, but some are reproduced in such quantity that they could be if anyone knew about them. But nobody does - except by accident or personal contact. Many American Embassies, MAAGs, wives' clubs and other organizations prepare handbooks for new arrivals which contain brief, current information on the country and its people and living conditions. In many cases, this is all a person who is going on TDY for a short tour needs. I think the only way to obtain them is to write directly to each country. USIA frequently prepares reports on the characteristics of the people. Most of these are somewhat restricted but are available to the military certainly.

AID moves in devious ways. Their reports and documents are issued in an infinite variety. A few are available directly from the headquarters in Washington, in the field, and from their subcontractors, universities and other organizations. I am here to tell you that there is absolutely no way to be sure you are getting all that comes out of AID on a particular country.

In addition to the individual governments, there are, of course, the various international agencies. Most UN Secretariat documents are for sale, and now I am pleased to say, more efficiently organized than formerly. Those of the specialized and regional organizations are frequently available free. Reports range in subject from ILO's valuable volume, "Indigenous Peoples" to the current hydrographic surveys of the Mekong River. These bring out a point which is equally true of many other types of publications. Since they are not reviewed and many of the listings are not annotated, you have to take a chance on the document. For example, we recently saw listed a UNESCO report on educational statistics. Hoping that it would contain data on education in member countries, we sent for a copy. When it arrived, it was a manual on how to compile such data. Thus, you have to collect a great deal you don't know whether you really want, and on receipt, keep, give away or use the round file.

Various private and semi-public organizations issue documents similar to those of governments on studies they are conducting or grants they administer in various countries. Again, some are easily located and the issuing organizations are generous in furnishing them. Some, however, make the same sort of difficulties as the government agencies. One of the most nightmarish situations I ever got into involved the Near East Foundation whose definition of the Near East stretches from Korea to Ghana. To summarize, my original

innocent request to the National Council for Community Development in Korea (which of course I had no inkling was supported by the Near East Foundation) eventually wound up some five or six letters later in the Pentagon, which had to prove we were a military installation and thus entitled to receive publications from a private source completely unconcerned with the military.

The next category is periodicals and periodical articles. Here again, U. S. and foreign governments issue a number of periodicals principally tourist, which are colorful and fun to collect - for example, Thailand Illustrated; statistical, such as the Turkish Review of Economic Conditions; and learned, such as Indonesian Abstracts. Usually the best way is to get on the mailing list direct for these and they are fairly reliable, though sometimes one has to remind the issuing agency that one is on the mailing list. Yearbooks are a different matter; it is almost certain that if you want to keep up to date, you have to write each year for the new edition. For periodical articles, it is usually possible to obtain tear sheets, though some will either generously send the whole issue or, on the other hand, ask for payment.

The last group of publications is a miscellany of ephemeral materials. This includes papers for conferences, theses, addresses by government officials, numbers of organizations, university faculties and students. All of these have to be individually acquired piece by piece and usually directly from the source.

These are the kinds of materials which make up our collection. Now a few words in general on how to locate and acquire.

In any acquisition process there are three steps: (1) search, (2) acquisition, (3) acknowledgement. In purchased materials steps 2 and 3 are always the same - namely, ordering and payment. In acquiring free and inexpensive materials, there is an infinite variety of methods. But let us return to #1. What are the main places to look for such materials? The answer, as I have indicated, is most anywhere in the world. We have learned of the existence of these materials from a variety of sources ranging from formal notices to casual conversation here and abroad. But the main sources are as follows:

a) Standard printed bibliographies: These are well known and I shall therefore dismiss them with only the comment that we find PAIS the most helpful.

b) Periodicals: There are some bibliographic journals such as Intercom. You are all familiar with the bibliographies frequently appearing in the learned and other journals. It is not sufficient to check these alone. We look at the footnotes, scan (as the military uses the word) periodicals such as International Commerce, the Brookings Newsletter, etc., for notices of reports and documents, and abstracts such as Foreign Education Digest, Asia Foundation Library Notes, to see if we want to acquire the whole article. A special class of periodicals

is, of course, the dailies. Included in these are regular newspapers where we learn, for instance, of conferences whose proceedings we would want to acquire; and the Congressional Record, from which we can frequently extract reprints of articles and speeches.

c) Bibliographies and accession lists. Of all sources, these are the most productive. Most special libraries and many others issue lists of new acquisitions and subject bibliographies or reading lists. Usually it is possible to get on the mailing lists from there. We receive approximately 25 different ones. As they come in, we check for items of possible interest, and after the material has been ordered or requested, we discard the lists so they do not aggravate our space problem. A special type which is not really a list are the LC proof sheets. Unfortunately, it is not possible to get these free by subject sections, and even if it were, the Card Division's terms of reference in determining subjects do not always correspond with anyone else's (for example, it always seems odd to me to see sports and games appearing with geography and anthropology) and there are always the miscellaneous sections: Titles from American Libraries. Thus, it is initially somewhat appalling to be confronted with large packages in galley size of these sheets but one quickly develops a facility in eliminating unpromising sheets and doing a bit of speed-reading on the remainder. From these dull-looking papers we cull hundreds of delicious goodies.

d) The last, and frequently the only source for learning of some items is personal contact, and this leads us into step #2, how do we get for our libraries these elusive things? Of course, we all know the use of professional friends and the information obtained from meetings such as this and the local, national and international library organizations.

This group is particularly fortunate for the military is indeed a fraternity. Some military librarians abroad have made a special effort to emphasize their collections on the countries where they are located and prepare useful bibliographies. In addition, the military themselves can be most helpful. As people pass through your post, ask them to keep the library in mind and send back materials as they come across them. Of course, the proportion who will remember to do this is small but exceedingly helpful. From these sources, we receive numerous publications ranging from local newspapers to locally printed books.

There are other types too whom it is wise to cultivate, as I indicated earlier in describing the kinds of organizations from which we get materials - government officials, university faculties and students, writers, speakers, visitors to the Library - I even had the temerity to ask General Taylor if he knew where we could get a copy of that People's War, People's Army when we were searching for it.

But even we librarians do not always keep each other in mind; except through our lists mentioned above we cannot inform each other

individually of choice tidbits. So much the less are, for example, government officials likely to remember that the MAI Library is interested in a new report on the snakes of Thailand - but if you ask for it they are only too glad to send. Also, personal visit or telephone call is, so far, only feasible and economical in a city such as Washington. Consequently, the great bulk of material is acquired through correspondence. My boss, General Newton, has an aversion to form letters and expressed his disapproval when he saw our request letters. But when I suggested as a substitute umpteen stenographers, he quickly agreed to let us use the former. One note of caution: Always put in a sentence to the effect, "If there is a charge, kindly quote price before sending," or you can run into expensive or embarrassing situations.

Included also in our form letters is a request to be placed on the mailing list of the issuing organization. Sometimes this request is complied with, but don't trust anybody! For example, when Michigan State University was conducting its Vietnam Project, I assumed that since we were on their mailing list, we were getting all studies from that project. Yet at a meeting of the Association for Asian Studies, I saw a whole tableful of reports which we had not received. So do not be chagrined to see something listed on someone else's bibliography which your library does not yet have. It happens to the best of us.

Don't think you'll hit the jackpot with each request letter. Frequently there has to be a follow-up. We keep a suspense file which we review every two months, sending a follow-up for those we think it worthwhile. Inevitably, some items come in the next day!

The last step in this process, #3, acknowledgement, is very simple. Merely say thank you! We do this on a routine basis by form post-card. When we receive an unusual gift or an unusually nice letter, we write a special letter.

What is the concrete result of all this activity? We probably have as much in our library that we acquired free as we purchased, and certainly things we would not have otherwise. Checking our most recent reading list on Thailand, out of 245 items listed, 147 were free, 98 we paid for. This is an extreme example for a great deal is now published in and about Thailand, I am prejudiced in its favor so I do a great deal of collecting and I have personal and professional friends there who are of boundless assistance. But even in the case of a country with more commercial publications and less personal contact, our latest list on Portugal, for example, shows 55 items purchased, 33 obtained free.

Of course, the joker in all this is that collecting in this manner does cost money! But as long as there are no unfriendly administrators in this audience adding up the hidden costs, we don't have to charge them to our library budgets. A great deal of economy could be effected by having a central source or bibliographical service to provide information on country and area materials. The Philippines have done much the best job in this field of anyone I know through their

Inter-departmental Reference Center. A few agencies in Washington attempted something of the kind, but since no librarians were included in the set-up, it was a ponderous and complicated venture doomed to failure. Until such a service is available, I am afraid we will have to continue each as our own detective and beggar.

DISCUSSION

Mr. Cook: I think probably the best way for us to do is to have specific questions at this time of speakers as they - upon the conclusion of their talk, and then at the end our discussions, we could have any general questions that might come up. Do any of you have any questions that you would like to ask Miss Anglemyer?

Q: I have one. Miss Anglemyer, do you publish a list of your books, part one, and part two, are your publications available to others?

A: The answer is in part yes, to both. We publish a Country reading list, that is one reading list on each separate country. We also publish a selected accession list twice a month; the reading lists are irregular. These are available to anyone who wants to get on the mailing list. As to our actual materials, we are open for reference to anyone in the Washington area for borrowing. It is greatly restricted because of the needs of our students. If, for example, in one class we have no one for Bolivia, somebody could borrow those materials, but if there are students for a country, we must keep those things for ourselves. With those limitations in mind, we are glad to serve anybody.

Q: Aren't most foreign publications sent to the Library of Congress after a six month period of time?

A: Yes, this is true. But the problem is that in Washington they don't have all their holdings. Many of the things that are published in the field are not sent to Washington so these things don't go to the Library of Congress.

Q: But aren't most of these publications available from other sources here?

A: No. For example, every year they have Agricultural Cooperative Conferences held by AID in Saigon, attended by the Philippines, Thailand and some of the other southeastern Asian countries. Proceedings are published in Saigon, and they may, be available this year, but they have not heretofore, been available through AID publications in Washington. You have to write direct to Saigon to get them.

Q: What is AID?

A: Oh, the Agency for International Development.

Q: Do you get magazines that are published with propaganda information?

A: Oh, yes, we do. I didn't mean that we didn't get any, but certainly in magazines you're bound to, but I meant on a particular issue. Like, for instance, the state of Kashmir. You won't get real information either from India or from Pakistan on who it should belong to. This was the sort of thing I had in mind. But we do get the tourist magazines. Of course they are all in a sense propaganda, but they do contain factual information on for example, places to visit.

MR. COOK: Our next topic is Acquisition by Gift or Exchange which, of course, is closely related to the topic that Miss Anglemyer covered. All of you, I am sure, know Miss Ball, who is the Executive Director of the United States Book Exchange. She is the former Chairman of the Special Libraries Division here - the Washington Chapter. I am sure you are all very familiar with the United States Book Exchange. Miss Ball is going to give us the information about that activity.

ACQUISITION BY GIFT OR EXCHANGE

by

Alice D. Ball
United States Book Exchange

This is like getting the Congressional Metal of Honor.

Miss Anglemyer has given a very good introduction to my exposition of acquisitions through gift and exchange, because the burden of my talk is that gift and exchange - both of them are obvious and very productive processes for obtaining publications of all kinds - but they can be very time-consuming and require a great deal of professional time and experience. They can, I am assuming, be more expensive, in the long run than simply going out and buying what you need. Miss Anglemyer has brought up another part of this - another aspect - of this whole thing which is that in many specialized areas, it is extremely difficult to purchase everything that you need for a comprehensive collection on the subject that you are dealing with. So, no matter how much money you have, assuming that some of you have some or more than I have, no matter how much you have, you must keep in mind the sources and the methods which are open to you through gift and exchange.

The process of getting materials through gifts can be very varied. It can range from the kind of process which Miss Anglemyer has been talking about where you check bibliographies, see the things that are offered free, write for them, and obtain them. In some instances, particularly in

learned institutions, there are persons who do nothing but this - that is their job in the library, to discover what materials are free and to go out, or by correspondence to acquire them.

The opposite end of that process, perhaps, can be illustrated by what a friend of mine did some years ago when he was faced with the need to set up an entirely new medical library. The University was setting up a medical school - they had never had one before, and he was given carte blanche both in time and money. His did most of the basic collecting, in periodicals, at least, by going across country and going down into cellars and pulling out the retrospective materials that he needed, and paying the University's money to ship them to the Library, where he then spent about a year putting them together and setting up the library.

This can be done on a very small and continuing basis, or on a very broad basis. In all cases, it does take a good deal of know-how, and a good deal of time and money, which are scarcely hidden costs. They can be very apparent costs in order to use this method.

As the periodical and documentary aspects of library collections and library users have increased over the past several decades, the need for a different kind of operation from the old style exchange has come to the fore. It used to be that the publications of universities were free to the university library. Exchanges could be set up and were set up on a very broad basis - a world-wide basis - in many instances, and this could form the intellectual brotherhood of at least the libraries of learned institutions. It was the basic kind of exchange for a number of years. This kind of thing has begun to decline for a number of reasons. Mailing lists get ossified and mean nothing, and the publishers in many learned institutions throughout the world are beginning to charge their libraries for publications. This is almost universally true in the United States so that this kind of publication is not available on current exchange on this nice, friendly, academic exchange pattern, any longer.

A friend of mine in the National Science Foundation likes to tell the story of some scholar who was visiting - on vacation - somewhere in Armenia and saw an ox-cart full of large books which he looked at, and discovered to be a complete collection of exchange publications from the University of Lund, Sweden. This small village in Armenia supported one small institute which was getting these publications on exchange, had been over the years, and was finally sending them off in the ox-cart to put to better use than they could put them in the library that they had. This illustrates some of the problems that can be gotten into with an uncontrolled exchange mailing list.

These things are, of course, somewhat remote from your particular concerns as military librarians except that you are, I am sure, faced with the problems of getting things which are not otherwise available, except through exchange or gift, getting them without spending all of your time corresponding, following up, and trying in various ways to nail down - pin down - what you want. At the same time, there are areas of acquisition

which you need to work in, and which are difficult, or very expensive to work in on the straight purchase acquisition plan; such things as replacement issues, early volumes of files which you have not been able to purchase, the various reports, documents which do not seem to be available either by writing to the Governments or issuing bodies concerned, or through the market.

Many of these things are available in the libraries which you may be dealing with - may know - but they may not be accessible to you because the libraries themselves - libraries comparable with your own - do not have personnel to handle these things on the old pattern of either issuing long lists for exchange purposes, or having visits from one library to another for the purpose of going through duplicates and acquiring needed publications.

This problem has resulted in the organization which I represent, the U. S. Book Exchange. It has resulted in a number of other patterns for exchanges, some of which you are, I am sure, familiar with. The Special Libraries Association for example, has two exchange networks in the Metals Division and the Science Technology Division through which the exchanging of lists on a very broad basis results in the possibility of acquiring a good many of the kinds of things that I am speaking of, such as scattered issues of periodical publications, and the various odd documents which you may be unable to obtain. But this, of course, takes a good deal of research and scanning of lists, again, writing letters, holding of your own materials, setting aside your own duplicates for listing and exchange purposes.

All of these things that I have been talking about, or referring to, are methods by which publications can be obtained, and foreign publications, in particular, can be obtained. There is no really sure way to get foreign publications by an exchange or gift process. There is no foolproof or complete way to handle this. You have to go through the problem of correspondence that Miss Anglemyer has been discussing. You have to do a good deal of work to obtain, not only monographic materials, but serial materials, documents - whether Government documents, or documents of other organizations.

There is one prime source which is just about, I have been told for the last several months, is to be re-issued, that is, the UNESCO Handbook for Exchanges, which should serve as a guide book not only for current, but for retrospective acquisitions from foreign sources. This has its limitations. It is limited in scope; it does not include all of the sources available, by any means. I can't speak for the new issue since I haven't seen it yet. I am talking about the older issues of this Handbook. It is the best central source for information about what is available in the way of exchange partnerships.

The U. S. Book Exchange is a co-operative operation of American libraries which was organized originally to help alleviate some of the problems of space and time which are implicit in acquisitions of any kind, and exchange and gift acquisitions in particular. The primary point of the

U.S. Book Exchange operation - its primary purpose as far as scientific and technical libraries are concerned, and particularly those which do not issue their own publications, or which issue them, as is true with many military libraries, on a classified basis which precludes extensive exchange. The primary purpose is to provide the service which cut down on the space and time and expense requirements of such libraries, and at the same time offers them the possibility of obtaining materials through a centralized source.

U.S.B.E. is not really an exchange pure and simple. It's not very simple to operate, and it's not very pure either. As some of you may know, we're having a strike right now with some of our employees so the question of our purity may be a little bit suspect.

However, the method by which U.S.B.E. operates is as a clearing house method. In the first place, it saves space because it allows libraries to send in - to dump their duplicates without having to hold them in their own institutions. This saves time by offering a centralized source - a listed source for the materials available and among foreign things - these include documents, periodicals, books, both retrospective and comparatively current, and it attempts to save time also by providing a back-order service. This means that if, for example, you ask for an issue of a foreign journal, which you find it very difficult to get, you don't have to keep re-ordering, and you don't have to guess at what the price may be. You know that the handling fee of this particular issue is 35 cents because that is our standard fee for any periodical issue, and that if you want to leave your request on file with us, you will get it as soon as we get it, but you won't have to re-order it.

The question as to whether U.S.B.E. saves you money or not depends on how you use it, what you're asking for. If, for example, you send in publications foreign or domestic, which you would otherwise discard, you pay a certain amount for shipping them to U.S.B.E. If you are looking for, let us say, three issues of Chemical Abstracts in the 1950s which would be very expensive to get from the dealers, and the dealers in general don't like to handle single issues, or to break sets, you know that eventually these three issues will come to you from U.S.B.E. at 35 cents each plus the cost of postage. In these two respects, your expenses may match each other or even give you some considerable savings. The broader use of this co-operative operation is the saving in time and money it can mean.

As a source of foreign publications, U.S.B.E. has its limits. There are 1600 member libraries outside the United States and Canada, but what they send in is scattered and unsure in coverage. We can't require anything other than we ask them to send in whatever they can. The bulk of our foreign material in periodicals and books - both come as duplicates from other American libraries and this is a very large amount, particularly when you consider all of the commercial research organizations, for example, the commercial organizations of research laboratories and libraries, which get many copies of foreign journals, and then

don't need them after they are immediately current. When they come to bind, they don't need to keep all of the issues.

The methods of acquiring from U.S.B.E. are three. We issue a list every month to each member library of certain foreign and domestic publications available, which is only partial every month - a partial list of what we have, since at any one time we have four million pieces - periodical issues and books under our roof. Secondly, you can order periodicals and serials directly. You can also order monographs directly if you want, but our incidence of filling these is about one every year, so it isn't very fruitful, but for periodicals - direct orders for periodical issues even in foreign journals, we have a very good percentage. The third method is, at least in the monographic area, is to come in and look at our shelves, and select what you would like to have. I don't know how many of you are going to be free tomorrow, and would like to come and look and see what U.S.B.E. looks like. I invite you to come if you don't mind crossing the picket line. The acquisition of foreign publications from U.S.B.E., we hope, will increase as the foreign membership increases, both in breadth and in ability to send in publications, and as we are able to do what we do not now do - solicite particular things from them.

This is a very brief exposition of what U.S.B.E. is and does and I will be glad to answer any questions.

DISCUSSION

Q: Does the Library of Congress send you material from Exchange and Gifts?

A: Yes and no. The Library of Congress has six steps of distribution of its Exchange and Gift materials. The U.S.B.E. is the fifth step in this, and the sixth is wastepaper, so we do get some.

Q: What is the percentage that a library will get when you check your list and you send it in? What is the way you check upon fields?

A: Well, this is somewhat complicated, simply because we have tried to set up a revolving system that gives equitable chance to everyone but - to put it briefly - each list of publications goes out to a limited number of libraries. These lists are not broadside and within this group of libraries the priority is rotated each month so that one library gets first chance one month, second chance the next and so on. The percentage is very difficult to say. Of course if you happen to ask for a hundred items on one list and you happen to be first that month, that's fine. You get them all.

Q: It must not matter whether you send in your list immediately or whether you wait.

A: The due date on the list is the date on which we begin to process all of them. If lists come in late, we do handle them but after the on-time group is taken care of.

Q: How does one join the U.S. Book Exchange?

A: I came prepared with some blanks which I will put out for you and you can pick up. The membership agreement is a very simple, non-contractual arrangement which just puts you on our mailing list. There is no money involved in this, and our address is 3335 V Street, NE, but it's on all of these blanks which I will put out for you.

Q: What are the restrictions?

A: There is no restriction except that it has to be a library that serves a group - not a personal library - that is the only restriction.

Q: Must you send in material to become a member?

A: No. We do ask that every library that makes a request send in whatever duplicates that it can, but this is a wide, open thing. The philosophy behind U.S.B.E. is that since it is a central clearing house operation which, in effect, is the property of all the libraries which use it that, every library ought to put in whatever it can and take out whatever it needs. The handling fees which the library pays for things it takes out are what keeps the operation going.

Q: How do you determine the distribution of your lists?

A: Determine the distribution? The libraries are arranged into three or four actually large groups - medical and scientific and technical, other than medical. Those who want English language publications only and the rest have general interest only, and each of these four groups then is divided arbitrarily according to the number of libraries in order to send the lists out. One thing I should probably say - this method of paying for a service and for shipping charges rather than a purchase arrangement makes it sometimes quite difficult for institutions - military institutions which have procurement officers in charge of paying the bills or other kinds of fiscal arrangement. This is sometimes a fairly difficult thing to arrange, but I can assure you that Mr. McGuire who is our accountant has experience, I think, with every possible kind of contractual - or pay - arrangement and he can usually suggest methods to a procurement officer if it seems otherwise difficult to arrange.

Q: You mentioned that you have contacts or connections with some 1600 foreign libraries.

A: Yes, that's right.

Q: Is there any concentration among Russian libraries?

A: No. Russia attempts, in exchanges at least, to concentrate its own arrangements through the Lenin State Library, which is one of our fairly heavy contributors and users, and we have two other Russian members libraries which do much less.

Q: Do you solicit material you want?

A: We do send out lists - single sheet lists - of much wanted periodical titles every month, but this is not really a solicitation. It does result in some very good contributions, but we don't pinpoint solicitations. We don't write to the Lenin State Library for example and say we would like certain kinds of things or certain specific titles. We've tried this from time to time on the spot basis and it doesn't work too well with foreign institutions so we haven't - it is an expensive process, of course, and we haven't gone into it.

Q: Are you a Government organization?

A: No. We wouldn't be having a strike if we were a Government organization.

Q: How much does the Library of Congress contribute to the Exchange?

A: It is fairly limited but the Library of Contress is increasingly or decreasingly part of our general contributors. We receive close to 2,000,000 publications a year now and I think the Library of Congress' part in that is no more than 25,000 or 30,000 items. Most of it comes from universities, special, and government libraries.

Q: Do you want current material? What kind of thing do you want?

A: The foreign libraries often want these things and can't afford to subscribe to them, and we do have a contract with the Agency for International Development, which pays the cost of getting those things to those institutions, so that in other words, they don't have to pay the handling fee to get these things. We have started to issue a DO NOT WANT list of things that we get locally in sufficient quantities, but in general I would say if it is cheaper for you to send rather than to call and to sort or go through, don't worry about it. Go ahead and send it. Any list of general categories of things that you have that you want to send us we'll be glad to check and let you know what is useful, but if that and the sorting that it would involve is more expensive than shipping, go ahead and ship. That's supposed to be one of our functions - just to be dumped on and to take care of it.

Q: What kind of arrangement does the Library of Congress have with libraries?

A: If I said Library of Congress, I misspoke myself. The Special Libraries Association's Science Technology Division has an exchange arrangement of about 200-250 libraries. The Library of Congress, of course, does a great deal of exchange on its own as a direct exchange, between LC and other institutions.

Q: I have one question. In the shipping and handling costs, is this just the postage. Is there generally, I mean, is that what they have to pay - the postage?

A: The postage is part of the cost. The postage or the freight charges, but we have a handling fee of 35 cents in addition for each periodical issued.

Q: I was thinking on the postage you could use - the libraries could send in the indicia label and have the things returned to them and cover the postage for one thing, and probably a lot of them do that.

A: Well, we can also, as a non-profit organization, use the library material rate of postage which is very inexpensive.

Q: What do we do about sending in accountable material?

A: As far as we are concerned, our doors are open for whatever you want to send and can send. Accountable material has been - the accountability - has been taken care of in a number of different ways by different institutions. A good many institutions simply send it without worrying about it on the grounds that it is not being sold. It's not, of course, being sold or discarded. It is being sent where it can be sent on exchange. The Government libraries in the District of Columbia by and large send what they have to the Library of Congress and what is left over from that - the Library of Congress has a very free hand as far as accountability is concerned. I don't know, frankly, what each - what the total answer to this is. I don't know what libraries do, but I know that many of them simply either decided in the library or have checked with their superiors and found that they can release it to us without difficulty. Others have not, I know. Some have decided that they cannot do it but on what grounds, I don't know.

Q: What hours are you open?

A: 8:15 to 5:00

Q: Are you open every Saturday?

A: Not every Saturday, normally about every other Saturday, but we are open tomorrow.

ACQUISITION THROUGH FOREIGN DEALERS

by

Dominick Coppola
Stechert-Hafner, Inc., New York

Part 1 GENERAL ACQUISITIONS

I. Introduction

The techniques of acquiring foreign publications are not so different from those necessary for obtaining domestic materials. However, ordering

books and periodicals from abroad does represent a more complicated operation and it is important to keep clearly in mind basic approaches to successful acquisitions and especially their possible applications to foreign acquisitions.

II. There are several considerations which may help in processing foreign publications,

1. Be aware of the advantages and services which dealers of foreign materials offer. These dealers have their own acquisition problems and on occasion you may find that they have incidentally solved some of yours.

a. A dealer, especially if he carries a stock, must keep well-informed bibliographically in the areas he covers. He consults catalogs, lists and other announcements from publishers and booksellers and uses whatever national and trade bibliographies exist.

b. When there is a scarcity of such media, as in newly developing areas, the dealer needs to venture directly into the field to purchase on the spot for stock to anticipate possible future demands from his clients.

2. Get to know these dealers and draw upon their knowledge of their respective areas and their varied activities, otherwise you may overlook acquisitions help of the utmost importance.

a. Keep in touch with your dealers in foreign publications, read his catalogs and other announcements, ask him to keep you posted.

b. If the occasion presents itself, make the dealer's personal acquaintance. This is something which both military librarians and dealers should welcome. Dealers very often do not even know who the librarian of an installation may be. All they may encounter are the awesome bids and requisition forms signed by everyone concerned except the librarian. The situation is slowly changing in recent times but there are still many military librarians who could get to know their dealers to their mutual advantage.

III. Problems of acquisitions will vary depending on the particular area of the world with which one is dealing. The results you obtain from a dealer in foreign publications will depend on the political and economic barriers which may restrict the free flow of books and periodicals, the local customs, the economic and booktrade development within the country.

1. Europe as a whole provides very good bibliographic controls and dealers are efficient, often providing better service than some of our dealers in U. S. publications.

2. Russia, the Iron Curtain countries, East Germany are also countries with good bibliographical organization. However, procurement is often dependent entirely on their official government appointed distributors. Trying to bypass these official dealers

is futile generally, but one must rely sometimes on sources outside a country to locate materials.

3. The newly-developing areas, such as Latin America, Southeast Asia, India, the Middle East, Africa, etc., as a rule have poor bibliographic controls. Some countries are without national bibliographies and even without prospects of undertaking them in the foreseeable future. Reliance upon dealers of materials being published in these countries reaches a high level of importance.

IV. Do not ignore or shy away from foreign bibliographies, catalogs, lists, etc., simply because they are in foreign languages and perhaps presented in a foreign manner.

1. Use such media as quickly as possible upon receipt. One should not wait for later listings in the usual journals or other familiar publications, for by then the publication may be out of print.

2. Such bibliographies, listings, etc., obtained first hand may very well contain information not to be found elsewhere, such as titles of new periodicals, forthcoming publications, international congresses, out of print titles newly reprinted.

Foreign materials, promptly obtained will help eliminate duplication of research.

Part 2 ORDERING

I. Introduction

A few comments on the ordering procedures employed for acquisition of foreign publications might be in order.

1. If your techniques for obtaining U.S. publications are faulty or ineffectual to some extent, it is likely that when you apply them to the foreign field, you will fare much worse. Foreign publications present more intricate acquisitions problems than do domestic titles. It is therefore imperative that improvement of ordering systems continue apace.

2. In 1958 in an article in LRTS, Robert K. Johnson spoke about acquisitions of domestic publications and made a statement which could just as easily have applied to foreign publications as well, declaring that: "It is obvious that the librarians of the Army institutions are saddled with a purchasing system which is unbelievably complicated and detailed, are burdened with unnecessary limitations the results of which upon library services the military does not readily comprehend." Five or six years ago I suspect that such a statement might have applied to quite a number of military libraries Today I am sure the description would apply to considerably fewer.

II. Some difficulties relative to the ordering of foreign publication might include the following:

1. Awarding contracts to U.S. dealers who do not have the knowledge of how to handle foreign titles.

Example - The inexperienced dealer, who entitled by government contract to add 15% to the dollar price of foreign titles listed by an established importer of foreign publications, was incapable of negotiating about any foreign titles which required clarification. This resulted in eventual cancellation of specific orders, which, had they been properly handled, could eventually have been filled.

2. Awarding contracts to small business without the know-how or the necessary personnel. Also we have seen one man organizations obtain the order only to foul things up because of insurmountable credit difficulties.

3. Placing orders which specify unrealistic time limits by which deliveries are to be made.

Example - Requiring two weeks for delivery of European titles, when even American publications cannot be supplied in so short a time.

4. Requiring formal bids for foreign materials fo which no price records exist due to lack of bibliographical information.

5. Insisting on receipts for petty amounts involved in insurance of shipments.

6. Requiring that all items on an order be delivered before any payments can be made. Sometimes this leads to a cancellation on the dealer's part of outstanding items which are taking too long to arrive. In this way he can make it possible to collect on all the material which he has already been able to supply.

7. Requiring that the first number of a per.c cal be delivered before the subscription is paid for. The dealer, however, must pay such subscription in advance.

8. Using fearsome looking bid forms and order forms. Business organizations have enough of a hard time training help without having to saddle them with complicated forms which often only legal minds can comprehend.

9. Sending belated claims of non-receipt anywhere from six months to a year after billing.

10. Not providing for some system whereby continuations can be put on an efficient basis. Since orders cannot be issued in some instances except for specific volumes which exist, this often results in a library not receiving new volumes which appear at a later date.

III. Some methods which have overcome some of the problems and have by-passed bids on specific titles.

1. Adoption of a C.O.D. system.

2. Issuance of blanket orders to dealers, covering periods of a month or a year and subsequently placing letter orders for specific titles.

3. Acceptance of materials on an "on approval" basis, receiving a memo bill and then issuing formal requisitions later on.

IV. Conclusion

The eventual aim for improving acquisitions methods should be primarily to encourage dealers to do business with military libraries. Do not confront the dealer with complicated instructions on orders, with regulations preventing him from changing quoted prices at times, with orders where he cannot change postage and insurance, with bids so intricate that they require highly trained business personnel for analyzing. It is important to keep reminding procurement that bids sometimes do not measure the intangibles of service which are difficult to translate into dollar value.

The burden of changing rules and procedures which other people have formulated rests ultimately on the librarians themselves.

DISCUSSION

Q: I have a question on material for purchase. Those who have charge accounts, for example, if we wanted certain publications you might say are not available on a purchase basis, you might say, would you buy something and send it on exchange?

A: No. We don't get into exchange because it becomes a cumbersome and unprofitable venture.

Q: What is a reasonable time for asking for delivery on an item?

A: I would say a month if the material is coming to you from abroad and that is to say a month after it has been shipped from abroad if what we're talking about is Europe, or a little longer for other areas - two months for other areas.

Q: I wondered about foreign periodicals. You say for instance that it's difficult for you if you do not get payment if we wait until we receive them. What do you do in a case where we should paid for one, then if sometimes happens to our periodicals and it never appears again after the first issue?

A: If you called it to our attention, if you know it before we do, in that case, there would be a refund. We would then deduct the cost of that issue and that would be about it.

Q: This wasn't mentioned particularly, but I hope everyone here knows about the Stechert-Hafner Book News. You mentioned the material listed, and if you wait too long there will be another notice out, and you might not get it.

Q: What if we select a publisher ourselves - want to write to him direct?

A: You might choose the most important one. We just follow the traditional lines of book sellers abroad and also in this country. If you need some information on occasion there is no reason why you can't write in to us and we'll give you the publisher.

Q: Do you publish anything other than Book News?

A: We publish subject catalogs in practically every field of books published here and abroad, not only in Latin America, but in other countries about a dozen catalogs a year which are devoted to such things as chemistry or botany, or serials and what have you, and you can get them simply by asking me, if you're not already on our mailing list.

Q: You said something about procurement regulations - there are regulations as to what we can buy from foreign sources.

A: I presume you're talking about the gold flow problem and restrictions?

Mr. Cook: The Buy-American Act. Well, now Mr. Kelly will answer questions in that area. He's going to take it up in his talk, so I think he'll explain that. Is that right, Mr. Kelly? I mean, you'll cover the subject and then we can discuss it there, because I think it relates to Government procurement rather than the dealing with the dealer.

Q: Anybody who has a charge account can fill out a book order form and send it through his contracting officer.

Mr. Cook: Here again is a subject that will cover - come into the area of - Mr. Kelly's presentation. Whether he will answer the question or not, I don't know. Do we have any other questions for Mr. Coppola of any problems related to his talk?

If not, we will proceed to this most complicated subject of Government procurement procedures which has a tremendous variety. Some people have the answer, some people don't. The speaker on this topic, Mr. Milton W. Kelly, is the Assistant Director of Procurement at the Headquarters, Air Force Systems Command. Mr. Kelly will make his presentation primarily from his knowledge and experience within the Systems Command, but the subject, of course, covers all Government libraries, and I'm sure from this we should get quite a healthy discussion.

GOVERNMENT PROCUREMENT PROCEDURES

by

Milton W. Kelly
Technical Advisor, R and D Division
Directorate of Procurement
Department of the Air Force

Before I begin, I wish to express my appreciation to Mr. Cowgill for inviting me here, to Miss Liberman, who has been very helpful in answering my questions, and to the entire program committee.

I wish also to correct an error in the program immediately. I am not the Assistant to the Director of Procurement. My position in the directorate of Procurement is Technical Advisor to the Chief, Research and Development Division. This division is also responsible for the base procurement function.

I was very much interested in what has been presented this morning especially the methods by which you can get material free or on exchange - it would assist our procurement problems tremendously - but, as you know, procurement is here to stay.

While awaiting my turn to talk, I read portions of an advance draft of a Proposed Report of the Brooklings Institute on Government Library Services. It will soon be published. I understand the draft was composed this year but the survey was made in previous years. I could give you a long talk on this report alone and from a debatable point of view. Of course the report contains some excellent suggestions to improve response to technical library requirements. There are also some very weak statements, in my opinion, which could easily be refuted. If I have time, I'll touch on these; but when you get this report you'll probably find some answers to the complaints concerning support of libraries in what you hear today.

There has been a serious lack of understanding - lack of communication - between librarians and procurement people. At AFSC we are trying our utmost to correct this situation, to improve our knowledge of each other's job. Perhaps I can be of some help in this respect.

You must realize, if you don't already, that procurement officers are authorized to take certain acts as an agent of the government; those within their delegated authority. The restrictions that arise due to this are not of our own making, believe me. They are based upon laws and executive orders and regulations which come down from above, often from the

Department of Defense. A recent example is the Balance of Payment Program known as "Gold Flow" and related to the Buy American Act.

We are also being consistantly urged by appropriation committees to obtain more competition, more competition and still more competition. We often have to justify our budget requirements in terms of increased competition possibilities. Congressmen are continually hammering away for more and more advertised procurements. I presume you have often read about this subject.

Many of our regulations reflect the requirements of Public Law 413 which has been codified. It is now referred to as 10 U. S. C. 2304(a). This law states that advertising is to be the normal method of procurement. So you see your requirements on procurement officers always have to judged for the possibility of advertising.

Back in 1862, Secretary Stanton made sealed bids (advertising) mandatory. There was no other way to buy materials or services. It was a very difficult method to live with. In 1926, during World War I, the Air Corps Act allowed negotiation but mainly for airframes.

Negotiation is bargaining, really, or getting competitive bids, in some cases by telephone, specifying delivery dates, terms and special conditions which go into the provisions of the contract other than standard provisions, often called "barter-plate" clauses.

In 1941, because of World War II, all advertised bids were practically scrapped and nothing but negotiated procurement was used. This was due to the urgency to procure war materials for use all over the world. It was at this point that I got into procurement.

Now I refer to Public Law 413 which says advertising will be the normal method. However, this law contains certain exceptions permitting use of negotiation in lieu of advertising. There are seventeen in all. One is that purchases under $2,500 in the aggregate may be negotiated. However, this does not eliminate the need for competition. There is also another exception called "Impractical to Secure Competition by Formal Advertising." Here a number of examples are listed, one of which is sole source of supply, and you might readily guess that a number of publications would fall in this sole source area.

To comply with laws governing procurement is a speciality; yet I am aware that some librarians do, in effect, negotiate. They may contact sources, obtain prices, determine availability, agree on delivery dates, etc. Such matters appear simple but they involve the application of regulations which are written to comply with DOD or Air Force Directives. For example, meeting certain standard of conduct and detection of collusive bidding. This last one, when found, often ends up in a fraud case. We have to be alert for labor law violations and acceptance of gratuities. You have probably often heard of that last one. One year when I first got into procurement, believe it or not, I received twenty offers of bottles of liquor

at Christmas time. The guide for receipt of gratuities at that time was not strict and was worded in such a manner that there were ways of accepting some gifts without violating the written words. It was customary in commercial circles to give gifts in appreciation for past business without implied obligation. The debarred bidders list is another excellent example. This list concerns people who are debarred from bidding for various violations of law. Before soliciting a bid we are required to review this list. Under certain conditions we cannot even ask for a bid or a proposal. You can see that just being a buyer is not as easy today as it used to be.

Now I only mention those things to indicate to you that procurement is not for neophytes, at least not in this day and age.

At one time procurement, or purchasing, was relatively easy. You could purchase with very few restrictions, so to speak, such as contained in the old Army regulations. I worked for the Army and later with the Air Force when Army regulations were used until the Air Force adopted them for their own use.

I would now like to talk about the types of procurement. I may find difficulty in communicating on this subject since we have present members of the Army, Navy and DSA as well as the Air Force and their terminology may differ from the Air Force.

We have many different types of procurement. Since a majority here have indicated they are familiar with what is known as base or local procurement, I will omit briefing you on elementary definitions.

In the Air Force these purchasing offices are referred to as central or prime procurement and base procurement. Central procurement is a method by which one contract for publications, for example, is made at one activity for the benefit of the entire Air Force. There are exceptions, of course, which allow for local purchase. Our Wright-Patterson Air Force Base, under the Air Force Logistics Command, awards four contracts each calendar year. One contract covers domestic books, one for foreign books, one for domestic periodicals and one for foreign periodicals. The total of these four contracts in the current fiscal year involves about one and a half million dollars. Foreign books alone may account for $350,000, periodicals for $119,500.

The advantages of central procurement are many and yet we have found difficulties with the system. However, the central procurement concept might have advantages in the Army or Navy if they are not yet using it. One of the advantages, for example, is that the high dollar value makes a contractor more interested in getting the business. He feels he is guaranteed a reasonable amount of return for his efforts and he will often give you better service. However, local sources are usually too small to bid and are thus eliminated. But, under the base procurement procedures a number of bases may solicit the same vendor and a contractor might get dozens of orders a week from various different activities. He has to

satisfy all comers. Different military installations are thus competing with each other for his product. The central procurement tends to minimize this because an award is made for the entire aggregate requirements over a period of a year. This type of contract also has the benefit of a blanket finding and determination under the Buy American Act.

This exemption to the Buy American Act is a convenience to the Air Force. The Secretary of the Air Force has granted the Wright-Patterson AFB a blanket authority to procure all foreign books without individual justifications for each purchase. This Secretarial determination covers an estimated $500,000 of purchases.

Under base procurement or local purchase procedures, however, this blanket F&D is not applicable. An individual F&D is required for each purchase.

Another advantage of central procurement is that each order given to the contractor enjoys the benefit of better discounts, thus better prices. You can see, of course, with large amounts of money involved, larger discounts are possible. We have received trade discounts from 20 to 23 percent; term discounts, for prompt payment, from one to two and a half percent additional.

There are, on the other hand, disadvantages of central procurement. One is that the contract is centrally administered. All orders have to go to the central contracting activity. As a result, your requisition is just one of a hundred or even one of a thousand, perhaps, so your requirement is not given individual attention. You must wait until a consolidated order is issued to the prime contractor; he, in turn, may have to contact a subcontractor to fill the requisition, that is a jobber or publisher, if an item is not in his own stock. As a result we have delay in transmission of orders and delivery delays. The contractor usually supplies the items in the order in which he receives them, without giving recognition to priorities. He has many shipments to make to many different locations. A single order may contain as many as 100 items covering requisitions from as many libraries. Your requisition may be the last one on the order. Next, our central procurement type contract calls for a notification to the librarian of shipment. On this notification are symbols to indicate "back order," "not yet published," "out of print," and such. If these notifications are delayed, the librarian will not know the status of her order. A follow-up letter would then be necessary either through the contracting officer at a distant location or to the contractor. Thus a contractor may become loaded with inquiries from individual librarians. If delinquencies become bad enough there is possible grounds for termination for default. However, terminations for default are not easily accomplished on central procurement contracts. If delinquent deliveries are small in relation to all deliveries to all librarians there is not sufficient reason to terminate the entire contract. The overall compliance might have been excellent. In local purchase you can terminate a single purchase order more readily and reprocure against the account of the contractor. Another point - central procurement contract is not personal except for the follow-up procedure which permits direct

contract by the librarian. This, as was stated, can become a burden to a contractor and result in poor response.

Follow-up can be a workload on librarians. They already have their hands full, I know, with many other things. Follow-up, I maintain, should be done by the administrating contracting officer, not the librarian. She has her job to do and she is not an expert in procurement matters or the legal pitfalls which can result from improper handling of delinquencies which are subject to contractual terms.

Now in local purchase, of course, you have the advantage of a variety of types of instruments which may be used. This is not generally understood so I will try to cover them quickly.

One is the imprest fund or petty cash method which is good up to $100 for a single requirement and also can be used for local pick-up of goods or COD purchases using the mails within the United States. For emergency purposes $250 may be used from petty cash purchasing. Then we have the "order-invoice-voucher" method which utilizes Standard Form 44. The Air Force is trying combining both forms with the purchase order form for use by all three services.

Next is the blanket purchase agreement which is an excellent method for getting standard commercial items up to $2,500 when the need for a class of items is repetitive. Books are an excellent example. Greater use of this method would be a partial answer to the Brookings Institute Report. This blanket purchase agreement may be a partial answer to their charge that government procedures are difficult and full of "red tape." Most librarians whom I've contacted stated that $2,500 per purchase will handle their normal requirements very nicely. Blanket purchase agreements are also suitable for local pick-up, if desired. There is no reason why there should be any difficulty in the small purchase area at this time. Finally there is the well known purchase order which may be "confirmatory," that is, to confirm a telephone order. All these procedures do not involve advertising.

Under more formal contracts we have the call-type contract which need not obligate the government to a particular contractor. Calls (or orders) are issued at the option of the government. A call-type contract may also be a "requirement" contract covering estimated requirements over a period of time but does obligate the government to the particular contractor for all its anticipated needs. This is similar to the central procurement contract previously mentioned, except that, when awarded by a Base Procurement office, it services local needs rather than national needs. Call-type contracts may be made by any base procurement office all through the three services, as far as I know.

The local call-type requirement contract brings you an advantage over central procurement because it is administered at your own level and also eliminates further need for competition for each call (or purchase). The competition is usually based on the lowest overall discount off list-price.

Another angle that must be considered in comparing central procurement versus base procurement is buying experience. We find, for example, that contracting people doing central procurement and handling a large number of contracts are normally very experienced people in negotiating and making awards involving complex requirements. On the other hand, the numerous administrative problems placed on them by the numerous activities they service often results in poor response to correct delinquencies.

Now, in base procurement or local purchase the buyers may be less experienced, probably because they haven't been asked to do much of this type of buying, but I maintain that local purchase buyers can become experienced very quickly with your assistance. You can give them lists of sources to contact. You can give them notification of contractors' problems such as Mr. Copolla mentioned to you. You can readily get together with buyers and solve problems very quickly.

Again, I wish to emphasize the word "communication" as the key to good relations. For example, where sources are limited in the local area and you communicate to the buyer that there is an urgent requirement, he will use the telephone or telegraph to give you the needed response. Again I am talking about local purchase procedures. However, as far as anything over $2,500 is concerned it must be advertised unless one of the seventeen exemptions to advertising applies. Advertising may be a little difficult for some librarians to live with because procurement will say, "I've got to advertise this. It's going to take thirty days before I get bids and then I've got to make an award." Of course you don't like this and, as Brookings Institute Report states, you'd go to the Devil himself if you had need of a book and you were authorized to go there to get it - it didn't say by what means.

As I have mentioned, the many restrictions on procurement is something that buyers have to worry about. Whether you are authorized to do the buying or if a contracting officer does it for you, these restrictions will apply. We must live with them. The government needs restrictions and controls because public funds are being spent. The laws and regulations are for the benefit of the business interests as well as the public at large.

Well, let's not fight it, except perhaps to ease up on unnecessary implementations of these laws. This is the big area for possible assistance. Librarians, for example, should, as did my own Command librarian, express their gripes loud and clear and ask, "What can you do about it?" Our regulations, which could be the Air Force Procurement Instruction or the Armed Services Procurement Regulations, are full of "Thou shalt nots." Although we cannot say "To hell with the regulations" we can often do something about them. We can make a recommendation to our headquarters and thence to the Pentagon. There they pass it on to the ASPR Committee - the Armed Services Procurement Regulations Committee - the DOD watch-dog in charge of our regulations. These regulations apply to the Army, Navy, Air Force and DSA. The ASPR Committee will discuss and research the recommendation. The initiator may even sit in on one of the subcommittees if he so desires or he may be called to serve as a

member on a subcommittee. And this means that the regulation as written, implementing a law or implementing a DOD Directive, may often be changed to suit a new situation. Once, a recommendation coming from one of our little ol' base procurement was submitted as an employee suggestion, believe it or not. It was passed through channels to the ASPR Committee; it was approved by the "legal beavers" up there; and they eventually accepted the recommended change.

So there is nothing impossible. And even if we can't change a regulation, we often can get exceptions in justifiable cases.

Back to another restriction on procurement - you have interdepartmental or coordinated procurement. I am sure you are all acquainted with General Services Administration (GSA) and the Federal Schedule of Supply. This is a Department of Defense assignment to GSA for the purchase of certain books which, in many cases, are mandatory on all services because it is considered more economical in the overall procurement picture, even if not for any one person or one office.

As another restriction we approach this monster called "Balance Payment Program," nicknamed "Gold Flow," which is really a part of the Buy American Act. My expert, Mr. Blum, on this business, told me to emphasize in talking on the subject that the Buy American Act is still in existence. The gold flow program - I use "gold flow" for the sake of brevity - is, in effect, a tightening up on the Buy American Act requirements.

Each Secretary of the Defense Department (Army, Navy, Air Force and DSA) is required to implement the DOD Directives under the Buy American Act. It has been necessary to tighten up on foreign purchases due to the flight of U. S. dollars to foreign nations.

What gold flow restriction amounts to is, in one short expression, "The expenditures for supplies of foreign origin will be held to an absolute minimum". The word "absolute" is underlined in my notes. The flow of gold to foreign nations has caused endangerment of our world leadership. It may jeopardize international relations and affect our favorable trading position.

Now perhaps you say, "What the devil are they doing to us? I need a $5.00 foreign book or a $2.00 foreign subscription and in order to comply with this gold flow restriction must I give a justification to support a determination of finding? Isn't it silly?" I'll admit it may look silly, but $5.00 here and $5.00 there can be thousands and hundreds of thousands of dollars when totalled. The multitude of little procurements for all your libraries must be looked at from the overall picture. The program is not only books and periodicals - it covers supplies and services as well. Anyway, it has been directed by Mr. MacNamara and we must comply.

Here, again, you have a situation where just anybody cannot make a procurement - a buy. The criteria applicable to the gold flow program is first, "Can we use U. S. substitute?" In order to do this we must determine if there is a need for the foreign product. Maybe you can forego it in its entirety. If not, procurement people, in processing the D&F, must have an adequate justification for the file.

The D&F may be reviewed by the Inspector General or the Comptroller General. They are our watchdogs and every buyer who is conscientious tries to satisfy these controls so he will not be out of a job. Therefore, we have to judge the requisition based on minimum need and, as I said a while ago, foregoing the requirement in its entirety. What does this mean to you? It is rather difficult when a scientist or laboratory engineer needs a foreign book and you must say, "Mr., or Colonel, we've got a Buy American Act involved here. I don't know whether I can get it for you immediately," and he says: "That's the government all over for you. I'll bet procurement is putting out the restrictions."

The gold flow program should be explained to him and the importance of it. Procurement people are always being required to justify their acts. The delegation of authority for the gold flow program is so important that the Secretary of Defense himself, or his Deputy, must approve anything over $100,000 in the aggregate. Each Secretary of each Department - Army, Navy, Air Force, DSA - must approve every requisition from $10,000 to $100,000. Requisitions up to $10,000 may be approved by the sole heads of a procuring activity. In the Air Force AFSC and AFLC are sole heads of procuring activity. In the Air Force, however, requisitions under $1,000 may be approved by the chief of the local procuring office. The redelegations below Secretarial level are for purchases based only on non-availability in the U. S. Other exemptions under the Buy American Act require Secretarial approval. Now, in the Air Force, this thousand dollar approval authority covers most of our requirements.

In the Air Force Systems Command the chief of the purchasing activity receiving this $1,000 redelegation is located at our divisions and centers. This, in effect, gives the $1,000 authority to the contracting office's immediate supervisor; that is, the local Director of Procurement. If one of four librarians need a foreign publication that requires a D&F, the requisition will be accompanied by a justification which she in turn might get from the person needing the book. The contracting officer would prepare the D&F (also called an F&D), have it approved by his own Director of Procurement right in his own office, and the buy proceeds. Incidently, this thousand dollars redelegation is an example of what has been done to facilitate matters in procurement. (Brookings Institute, please note.)

I will touch on what we do when a foreign source must be contacted; that is, when a foreign firm has no representative in the United States. In the Air Force we send our requisitions to the Director of Intelligence at Hq USAF who, in turn, makes arrangements with the appropriate air attache to get the book.

Leaving the gold flow monster, let's see what we have done to improve procurement of publications. We have had conferences with the central procurement office at Wright-Patterson AFB to iron out some difficulties in the award and administration of contracts to make it more responsive to the librarians. We have established a greater use of purchasing at local levels in lieu of using the central procurement system. We have told librarians "why, where and when" they should proceed under local purchasing instead of central procurement. We have also provided more funding flexibility. We have a maximum of three funds which can be used. That is, two in addition to the regular programmed monies that are budgeted by libraries. We also have the European Office of the Office of Aerospace Research which will purchase for us in the European Theatre in lieu of using the air attache procedure. What we will do is (it's a big job yet), automate as much as possible. This would be only for repetitive requirements. I know you've had talks on automation earlier in the conference.

DISCUSSION

Q: With reference to the $1,000 or $10,000 limitations, is that $1,000 over a year's period?

A: No - $1,000 in the aggregate for any one requirement.

Q: Then through the year you could have ten $1,000 requirements?

A: Oh, yes. One every day, in fact.

Q: Do you have a regulation that tells you that?

A: Yes.

Q: I want to talk to you later.

A: The regulation is not printed. There is a regulation on the Buy American Act. This is an implementation of the Buy American Act under the gold-flow program as directed by the Secretary of Defense.

Q: But in your Command you interpret it per order. At our place it is interpreted per year.

A: Per year?

Q: Yes, that is why I brought up the question.

A: I'll tell you what I'll do. I will come back after the luncheon and talk to anyone individually if you wish to have a little talk on this point.

Q: Can you refer to something which might help us in the Army with the interpretation as given by the Air Force?

A: I was just asked this question by the young lady at my side. I am going to give you a reference, which by its absence from placing restrictions to that effect, allows you to apply the "per action" interpretation, not the "per annum." I will read a portion of a letter that comes from the Secretary of Defense, dated 11 August 1962. The subject is: Procurement of Supplies of Foreign Origin for Use in the U.S. (Buy American Act). The entire program that I mentioned is a further restriction on the Buy American Act. It does not replace it by any means. I won't quote all this letter to you except the first sentence which reads, "Until further notice 'proposed procurements' of supplies for use in the United States which would normally result in the acquisition of foreign end products under the Buy American Act procedures currently set forth in Part 1, Section VI, of the Armed Services Procurement Regulations, will be submitted in writing for approval of the Secretary of Defense, etc." There are redelegations in this letter in paragraphs 1 and 2 and in every case it refers to proposed "procurements". I emphasize the "s" because this does not imply a single procurement but any number of procurements. Furthermore, there is nothing in the letter that states there is any limitation regarding a specific period - annually or otherwise - so in the absence thereof, you are not violating any restriction in applying the dollar amount to individual purchases.

Let's go back a little bit. The procedures established by the various departments require a D and F. Now this D and F business - Determination and Finding - can be in some instances a sort of blanket determination and finding, such as the one given for our central procurement contracts. It can cover a number of items or quantity of items over a given period of time if the requirement is justified in its aggregate.

Let me give you an example. At one of our centers which does laboratory research they require monkeys. Monkeys are of foreign origin although I don't know why they come under the Buy American Act because the Act concerns "manufactured" products, and I doubt if monkeys are manufactured. But to continue - a laboratory needs monkeys for various test purposes. They used to get a Finding and Determination for every batch that was needed - ten, twenty, whatever it happened to be - before they realized they could cut down on their workload by combining their requirement on an estimated basis of, let's say, one hundred and fifty per year. So in justifying their program which requires monkeys for experimental purposes they estimate the number needed, the dollar amount and the source of supply by each country of origin. Thus they get authority which covers requirements for the entire year. For local purchase, we cannot obtain an open-type D and F as provided for central procurement contracts. There must be a specific need because requirements have to be kept to an absolute minimum, in order to support an exemption under the gold flow program and the Buy American Act.

Q: Does that mean that you would have to justify any additional requirement for use in the Air Force every year?

A: Yes. If you get an exemption for a single purchase or an annual purchase requirement, it will not be good for the next one. Each D and F stands on its own. An example I gave you is the "monkey business" for aggregate requirements. The only other one I know of is the special exemption which our central procurement activity at Wright-Patterson gets which I have mentioned. Their justification and authority to procure foreign publications under their contracts - one for books and one for periodicals - may be termed a "blanket D and F". As I have said this enhances the use of those contracts since they eliminate these individual justifications and approvals which you need otherwise. Obviously if there was a base in Montana somewhere and their headquarters is SAC Headquarters in Nebraska, they may have to send in a justification to the SAC Headquarters in order to get the approval which authorizes the buyer to make the purchase. This is true under GSA, incidently. You have under a SCA class some foreign books. I think the Encyclopedia Britanica is one of them. This is a foreign book which you no doubt need, but you also need a justification to support a D and F - covering this requirement. The justification will be passed to GSA through the contracting officer or whoever makes the purchase. Until restrictions under this Buy American balance of payment program are relaxed, we are stuck with making these justifications. We have made innumerable requests to the Pentagon for relief in this matter. One assist we have received so far is in the research and development area for studies; otherwise, this one thousand dollars is the only assistance we have been able to get. So far we have been able to live with the restrictions. Any other questions?

If I may have about two more minutes here, there is one area in the small purchases data that has come to my attention while talking to people outside. Obviously, when you all raised your hands about knowing something about local purchase procedures you were telling the truth, but you weren't telling the whole truth. There are some methods of procurement you probably don't know about because your local purchasing people haven't told you about them or don't want to tell you. I only have to refer you to your own library shelves which have copies of the Armed Services Procurement Regulations. If you are in the Air Force, you also have the Air Force Procurement Instructions. If you are in the Army, it would be the Army Procurement Procedures. The Navy has a similar one. I don't know if it's the Naval Procurement Procedures or not, but all of these are implementations of the ASPR. Just for your own information, look through them.

One gentleman asked me how he could get publications over a given period of time. I referred to parts of the Air Force Instructions which cover the call-type contracts of which I spoke.

Another question asked which seems to be most appropriate to you people is the unpriced purchase order. How many of you here know about it? There are some Navy people here who don't seem to know about the unpriced purchase orders and none of the Army people raised their hands. Look into it. Get a copy of the Air Force Procurement Instructions if you can. Check Section III, Part 6, (3-604), for the method of using unpriced

purchase orders. In your area it seems to be most appropriate for ordering back issues or those not yet printed.

"Until forbid orders" may also be placed under the unpriced purchase order method such as annuals or quarterlies even without prior knowledge of price or without knowledge of delivery time, but of course they will be subject to the annual appropriation act for funding. The unpriced purchase order calls for an estimated amount of money which will not be exceeded. When the material is available, it is shipped, invoiced and paid for as long as the bill does not exceed the estimated amount of money stated in the order. See the advantages of it? I can think of only one other use. It could be used to obtain rare publication. The use of the unpriced purchase orders has only recently been put in the Air Force Procurement Instructions. I was asked if it was in the ASPR. I think it is (Ed. note: It is). If it is available to the Air Force, then other departments should become acquainted with it because it is a convenience which will help a lot. Any other questions? Thank you.

BUSINESS MEETING

DISCUSSION OF CONTINUING PROJECTS

by

Catherine R. Hetrick

In preparing the material for this paper I did something which I highly recommend to all of you, namely re-reading the proceedings published at the conclusion of each of the six previous Workshops. Much serious thought was obviously given to the preparation of many of the papers, and it is surprising how timely many of the topics remain.

The First Workshop was held at the Air University, 21-23 October 1957, with a total attendance of 45, composed of seven Canadians, fifteen Army, ten Navy, seven Air Force and six other representatives. The recommended projects are as follows:

1. Military biographical data sheets were to be compiled. The Army War College assumed responsibility for this project.

2. A bibliography of biographical sources will be produced and distributed.

3. The Union List of Foreign Military Periodicals is to be expanded through cooperative reporting.

4. A directory of Military Libraries and Librarians to be produced at AFIT will be expanded and provided with a subject index.

5. Improvements in inter-library loan policy to be implemented.

6. Cooperative indexing of military periodicals to be undertaken by twelve libraries - to result in not less than 20 new titles in addition to the current list. Air University will assume responsibility on this project.

7. Six libraries volunteered to collect special subject heading lists. A core list was thought to be desirable.

8. A probe into the feasibility of exchange of personnel was to be made, with the view to provide maximum use of particular capabilities.

9. The problem of Security remained unsolvable - no recommendations were made.

The Second Workshop was held at Fort Sill, Okla., 2-4 October, 1958, with a total attendance of 76, broken down as follows: three Canadian, 38 Army, ten Navy, eighteen Air Force and seven other representatives. The recommended projects were as follows:

1. A Union List of Military Periodicals was approved as an interservice project and a committee was appointed to implement the action.

2. Cooperative indexing of military periodicals project was still being monitored by the Air University. Sixteen new titles were added between Workshops, making a total of 74. Seven other libraries are preparing copy for the Index. Beginning 1 January 1959, Air University Library will accept the offers of other libraries to prepare copy for the Index in pertinent subject areas.

3. On the Corporate author and serials cataloging problems, no definite recommendations were made although all expressed dissatisfaction with the present rules; further exploration of the problem seemed desirable at the next Workshop.

4. As far back as this Second Workshop it is interesting to note that suggestions for revision of CSC classification standards grew out of the discussions of two panels on Personnel and Training in Libraries.

5. A theme for a future Workshop was suggested in the topic of cataloging documents, theses and other in-house publications; data could be distributed similarly to the Biographical sketches.

6. Directory of Military Libraries: a standard format was published as appendices to the Military Librarians Bulletin and a chairman was appointed to form a committee to select an editor for the first formally published directory.

The Third Workshop was conducted at Monterey, Calif., 8-10 October, 1959, with 77 attendees composed of two Canadians, 28 Army, 23 Navy, 16 Air Force and eight other representatives. Only three formal recommendations were made:

1. The Union List of Military Periodicals: The Preliminary edition was announced, and a use study of the list was suggested.

2. It was thought desirable that study be given to the idea of creating central subject depository collections for military libraries.

3. A series of DOD subject bibliographies was proposed. The Army Library, being already involved in this type of activity was suggested as the monitor.

The Fourth Workshop was held in Washington, D.C., under the auspices of ASTIA, 5-7 October 1960, with 154 people in attendance. No breakdown of registration figures for the various Services was obtainable. Recommendations from this Workshop were:

1. A steering committee was to be appointed to investigate the possibility of designating a clearing house for bibliographic activities and a medium for announcing current bibliographies. The Committee was to invite active participation and report at the next Workshop.

2. The Union List of Military Periodicals was published. Various suggestions for its best cooperative use were made and tentative ideas for future editions were voiced.

3. Numerous projects were suggested (on paper only), none were really implemented or even fully discussed:

a. Who's who of the military librarians.

b. Compilation of military quotations.

c. Annual anthology of military writings.

d. Library handbooks.

e. Publicity brochures.

f. Indexing of military journals for the years 1940-1950.

g. Standardized accession list forms.

The Fifth Workshop was held at the Air Force Academy, Colo., 4-6 October, 1961. The 76 registrants included one Canadian, 29 Army, fifteen Navy, 29 Air Force and seven others. This was a Workshop on future Workshops, so it was not remarkable that no project recommendations were forthcoming. All discussions centered on the types of libraries represented, and on the formats of future Workshop activities. The real recommendation was that there was a genuine need for more Workshops.

The Sixth Workshop was held at White Sands, Missile Range, N.M., 26-28 September 1962, and no count of registrants has been published, but certainly at least 75 people were in attendance including one Canadian representative. One large single recommendation evolved out of this Workshop, namely the advice to the U.S. Civil Service Commission on the re-writing of the classification standards for the 1410 and 1411 Librarians series.

In going back over the activities and projects of the various Workshops, it seems to the speaker that a pattern has evolved. The smaller the number of attendees at a Workshop the greater the number of completed projects. It also seems apparent that we are facing a time of decision as to whether we continue in a true workshop format or evolve into a symposium type of activity.

There are only, to my certain knowledge, one or two of the six years' recommendations that are still being carried on.

One is the Army War College bibliography, or biographical sketch series. I presume, but I cannot tell definitely, that some of you may have a comment on this, because I myself do not receive all the material that schools and other types of libraries participate in. I am not on everybody's list for everything. Therefore, I do not know whether any of the other projects are still kicking around and still going on.

Those are the projects that we have thought about, and some have been accomplished. It is probably time to think about the updating of the Union List of Military Periodicals, a new edition or supplement thereto. There have been many new titles, I think. Presumably a new Directory of Military Libraries and Military Librarians would be helpful to many of us.

I think some of the projects that have been mentioned that I have garnered from the Proceedings have great merit. It is now up to Mr. Cowgill and you to decide which of these that are pending you would like to go on with, or maybe there are new ones by this year.

DISCUSSION

MR. COWGILL: I think Cathy has some very important points. I think one of the things that is to be decided is what is the worth of a Workshop that produces only written recommendations and does not thereupon follow even its own recommendations or make an effort to see that any of these recommendations are fulfilled.

It occurs to me personally that possibly one of the reasons is that we have had a great many recommendations, perhaps more than can be tackled, certainly, to any great degree.

It is possible that we could contend ourselves with one recommendation for action per Workshop and see that the following year includes specific responsibilities assigned in a specific place for that particular recommendation, entirely separate from what other planning may be going on for the next Workshop.

All of these things, I think, you should be thinking about. I think that the next Program Chairmen should have this responsibility to think about in their programs. I will have some written recommendations on this aspect at a later date, before the next Workshop.

Are there any other comments concerning our lack of follow-up in terms, at least, of the total number of our recommendations in our Workshops' actions? If not, I will proceed rapidly in order to end early this afternoon, to my next topic, the last year's Workshop.

SUMMARY OF LAST YEAR'S WORKSHOP

by

Logan O. Cowgill

You should have in your hands by now the Proceedings of the Sixth Military Librarians' Workshop at White Sands, New Mexico. It is blue, and has a first revision right on the cover - a hand revision. If you do not have a copy, please drop me a note about it.

I presume you are all interested in the status of the Commission's activities with regard to the Position Classification Standards Revisions recommended in the conclusions and recommendations as contained in these Proceedings.

I think I can give you the latest status as of day before yesterday. The release timetable of the new Standards is expected to be something like this. The tentative draft and manuscript will be completed by 15 October, in a week to ten days. After this, normally four weeks are required for clearance by the other parts of the Commission's staff, then, two weeks to six weeks more for printing and distribution through personnel channels to the major Departments and Commands. Ninety days after the receipt of the draft in the Department of Defense - Personnel Offices of the major Commands - if there is no major outcry, the Standards will be promulgated. In other words, no official action can be expected before 1 April 1964.

As to the significant changes you may expect to see in these revised Standards, I can say that our recommendations have been taken very seriously, both because Mrs. Samuels was there personally and because she had a package - these conclusions and recommendations - to work from. This is not to say that she did not go elsewhere and did not listen to others in arriving at her decision.

As to these changes for the GS-1410 Librarian Series, the first paragraph will be the usual summary of the current status of the profession, but revised to reflect present changes, especially in the area of technical librarianship. Then will follow the exclusions and inclusions paragraph. Excluded, for example, will be the computer and programmer types, even if they are working solely on library programs. Next will follow a description of the specializations. Here you may expect a major change. The

specializations will be as follows: three major types. Please note that the titling of them is not yet firm.

First, there will be a managerial specialization. Of course, this is now called administrator, or administration. I am not sure that this name will be retained. In any event, a managerial specialization will include both Line and Staff positions. Now there will be a narrative coverage for every grade, GS-5 through 15. You may remember that, at present, the separate narrative ends at a GS-13 and this, although it is not accurately true, has led to the suggestion in the minds of many personnel people that the GS-13 is a good top and any grade above that can only be given in special and unusual circumstances.

Second, there will be the functional specializations as in the past - by reference, cataloging, or acquisition. Least change is to be expected in the narrative here, and separate narratives will cover Grades GS-5 through 13.

Third, specializations by subject area or the type of user services provided. No title has been assigned to this category as yet. Grades coverage will be from GS-5 through 15. Important here to the grade evaluation will be the kind and depth of service rendered and degree of subject knowledge required. The Library Technician series, GS-1411 - note the change of name. This is decided upon. The narrative for this series has been completed through Grade GS-5.

The sticker, as of Wednesday, was how far above Grade 5 will the coverage be extended. You may remember that our recommendations were through GS-11, at least.

Finally, it should be stated that the Standards cannot be expected to resolve the present internal stresses within the profession with regard to the viability of the Technical Information Specialist as a separate series or in a separate breakdown. The Commission takes the position that its function is not to guide or to anticipate further developments in this or any other changing profession. The Standards can only reflect the current duties of librarians in the Federal Government at this time.

DISCUSSION

Q: What is the new title for GS-1411 series?

A: Technician - Library Technician.

Q: How will the draft be distributed?

A: Maybe I should have emphasized this earlier when I was telling about how it got out of the Commission. It goes through Personnel channels. Major Commands and the Personnel Office of the large installations will receive copies of this. Some of us here will get a copy of the draft, and,

since it is not under military security classification, it can be reproduced. But in any event, of course, you will understand that the Personnel Office copy is the official copy, and any comments to the Commission officially from your Agency will come from the Personnel Office. They can ask you, and probably would ask you, for your comments. This is not to say that your personal comments cannot be addressed either directly to me or to Mrs. Samuels, but they would be entirely personal and off-the-record comments.

Q: How will this be handled in AMC?

A: This is an interesting question. You will understand my emotional bias, when I say this, this is not likely to get through AMC very quickly. But, seriously speaking, AMC would be a major Command. Since it is such a large major Command (that is, the Army Materiel Command), I would assume that it would go at least down to the subordinate commodity Commands or the separate Laboratories and installations directly under AMC.

Q: How will it be handled in the Department of the Army?

A: The official copy will go through personnel channels. In the case of the Department of the Army, it will go to the Department of the Army, Office of Chief of Staff for the Departmental Headquarters.

Q: Can the librarians request a copy?

A: Yes. This could be done. They could ask for a draft, and this will help the situation as far as they are concerned so that they will not be inadvertently left out.

Q: How many of our recommendations have been accepted?

A: I am sure you will have noted, through my somewhat pussyfooting description of the recommendations here that all of our problems were not resolved, nor all our recommendations accepted; but I think we have succeeded to a substantial extent in moving the Standards in the path to which we want them to move. I think there will be a greater recognition of the differences between libraries on the basis of what they do, and how they serve, rather than on size or on installation level and things of that sort. We have not yet reached the millennium, but I think we have improved. I hope it will turn out to be that we have improved the Librarian Standards.

We have not resolved the problem of whether there will be a different series for Technical Information or not. The Department of the Army has made a recommendation in this area that it be so, but this has not been accepted as yet by the Commission. Probably at this time it would not be because, on the other side of the house, in revising the Librarian Standards, it was discovered that the distinction between the two was not clear enough at this time, insofar as the librarians were concerned, at any rate.

Q: What changes have been made in the 1411 Series? To what grade will they go?

A: Basically, our recommendation there was, of course, to extend the grade, and the answer is, we don't know at this time. We have gotten a re-write, and formerly the GS-1411 series were merely a pale reflection of the 1410 in the sense that they had really not very much separate content - at least, if you divide them by grade - but now they will have an independent existence. At least, we will have a narrative coverage by grade. How far up it will go has not been finally determined.

I thought there might be more questions in this area. It is going to affect all of us.

Q: Would you agree that Mr. Carlson recognizes that the technical libraries have an important part in the Scientific and Technical Information Program?

A: Yes, I would. I do not agree with him, but he doesn't agree with me, either. He is in a very influential position now. This is not to say that I am sure he intends to carry this thing to the extreme, or that he intends to follow in every one of the patterns which he has established as far as librarians are concerned, but this is in his mind. This will be a task and a challenge to change his mind in this respect.

Q: Haven't you always found that he has been receptive to libraries and their problems?

A: That is very true. Every time I had - the limited number of times I had opportunity to meet him, he has always been very straightforward. He has been very interested in listening to what is said to him. He still has his own mind, but he has changed in some respects already, so why should he not change in these respects? It is up to us to influence him in this direction.

Q: Will we get copies of the Proceedings of this Workshop?

A: Yes, if you are on the mailing list for this Workshop. We are going to have to juggle this list a bit based upon our membership list in the Division and also on the Workshop attendance. Those two are not necessarily synonymous, as you know.

SUMMING UP AND PLANS FOR NEXT YEAR'S WORKSHOP

by

Logan O. Cowgill

The next order of business, I believe, that we can proceed to, is next year's Workshop.

We are rich this year in the possession of more than one informal offer from brave (and I am sure Miss Liberman now thinks entirely foolhardy) people to host the upcoming Workshop.

We are still possessed, of course, with the continuing necessity to make a decision concerning the type of program. Mrs. Hetrick has indicated some of the wavering which has taken place in the past which will fulfill our purpose, produce a viable recommendation, and also try to interest the Group as a whole as much as possible.

All these things may not be possible in one Workshop. In this sense, alternatives would appear to be:

1. To continue, as in the past, with the hope that the selected program will be as comprehensive as possible and, not to exclude too many people, will result in a viable recommendation. All of these are difficult problems to answer. In the past, we have just passed the buck to our Program Chairman and let him struggle with it, and then the next time, the Program Chairman struggled all over again.

2. We could select programs three or more years in advance, with as many possible facets of librarianship covered in a planned sequence, and with a planned organization or appointed organization which continues for the previous Workshop. We do not drop the Workshop at the end of the Workshop; we continue the organization of that Workshop to some degree. We rather lay the onus on the Program Chairman to appoint a continuing committee for that Workshop and keep it going, as long as there is any life left in the recommendations of that Workshop.

3. We might have two entirely different programs within one Workshop, with two Program Chairmen and with at least two recommendations, and with two courses of action for recommendations.

4. We may have two or more separate Workshops at different times and places.

These would seem to me to constitute about the total number of variables. Perhaps there are some others.

The advantages and disadvantages of any of these alternatives to the host, participants, and the program are so intricately interwoven that I think an off-hand decision is probably unwise. The problem cannot be ignored, though, any longer. Hence, with your approval, I propose, as Chairman, to do the following:

1. For the next Workshop only, choose one of the four alternatives previously stated.

2. To prepare and distribute before the next Workshop a questionnaire - I am sure all of you will be expert questionnaire filler-outers by the completion of FY '64 if you have not done anything else. The questionnaire will

state the four alternatives supported by a brief narrative outlining the advantages and disadvantages of each. You will be asked to select one alternative and, in good questionnaire fashion, I think there will also be an other check points. It is reasonable to assume that if you select other, that you will describe the advantages of this other in some detail.

My choice, I think, with your approval, would be for the next Workshop to have one Workshop with two separate programs and with two separate Program Chairmen, each responsible for his own program and only cooperating with the other if he wishes and, of course, necessarily cooperating with the host or hostess in the matter of logistics.

Do I hear any discussion on that recommendation?

DISCUSSION

Q: Why is there opposition to our present type of Workshop?

A: I think that one has the feeling that part of it is a reactionary feeling and part of it is an honest difference of outlook and purpose. There is a school situation, and there is a technical research and development situation. With two programs, I think we would cover those in entirely separate fashion.

Q: You may still have most people attend the technical library session.

A: This is possible, but I think this should be tried. If this is the case and we don't have enough people, then that is one of the answers.

Mr. Stewart made a motion - will someone second the motion that this type of alternative be tried? It has been seconded that this alternative be chosen for next time. Is there any further discussion?

Q: I am in a school library, but I am more interested in the technical research library. What do I do about that?

A: I don't know exactly how to answer that question except that I suggest if you have separate Program Chairmen, you are going to have to work with him on this because it is true, as has been mentioned, that there are not too many people in the school program anyway. He is going to have to depend on the school people. If you have a School Chairman, your first obligation probably would be to support him.

Q: Will inviters be given their choice, or will you or the Committee or the host assign a person to be on the Program?

A: My first thought would be to have the Program Chairmen ask for assistance in preparing the program. Are there any other suggestions on this?

Q: Will we have joint sessions?

A: No. I perhaps should have made that clear, but I would say that the two sessions would be the working sessions. I personally would like to get back to working sessions. Those would be entirely separate. You could not attend two programs in this area, but you would have, as we have similarly here and have had in the past, a final session of both in which the recommendations would be aired and discussed and comments from the other program members could be made at that time. You would go away knowing what the other program people had done. You might possibly not have too much influence on what they had done.

Q: There might be a joint session in the morning and separate sessions in the afternoon.

A: Well, I would take it that we will go to a Workshop next year which will be one Workshop but two different programs. How separate they will be can be left to the Program Chairmen. Essentially, they will have two different purposes, two different themes.

The next order of business would be the selection of our next host. I will entertain any motion from the floor in this respect.

MISS CANOVA: Air Force Special Weapons Center, Kirtland Air Force Base, extends an invitation for the next Workshop.

MR. COWGILL: Do I hear this seconded? It has been moved and seconded. Our next hostess will be Miss Canova from the Air Force Special Weapons Center, Kirtland Air Force Base, New Mexico. Are we all agreed? Is there any discussion? It has been agreed upon that our next hostess has been selected.

The next order of business would then be the Program Chairman. I believe in the past it has been the policy that the Program Chairman came from the same Service as the host or hostess. This is not necessarily true, I suppose.

Mr. Field, would you like to make a suggestion on this point?

MR. FIELD: I have a note from Mr. Severance suggesting a separate meeting for school libraries.

MR. COWGILL: I think that we have agreed that we will have a separate meeting, but at the same place. What I would like is that you would offer Mr. Severance or a member of your staff as Program Chairman.

MR. FIELD: I cannot make a committment now.

MR. COWGILL: So be it. You will take the note back to Mr. Severance. I would then like to ask a proposal on the Program Chairman from any Service or from any area. Do we have any specific names? Well, then, I

think I will have to draft someone and, rather than do it in the public eye, I will do it in privacy. We will get over that point. I think this problem is not a major one at this time.

We do have a hostess, and we will go forward in this respect. I would want to say that, when our Program Chairmen do get on board, these Program Chairmen select a program which will result in perhaps a lesser number of recommendations or even one - that this recommendation be regarded as a continuing responsibility of that Workshop until action is taken.

Now we come to a time in the program where I am sure that, whatever our difference of opinion in the past, we will unite into one, and this is when we give thanks to first, our Program Chairman, Mr. Dwight Lyman of the Naval Underwater Sound Laboratory, New London, Connecticut, for his work in developing this program and giving you the opportunity to discuss the questions that you have discussed here. Mr. Lyman.

And then, of course, to our hostess, we owe the always utmost thanks because those of us who have had some knowledge of the background of planning of the Workshops know that this is a most difficult task and a very demanding one in terms of time, effort, and even sometimes a little money. In this regard, I am sure that she will be most pleased to hear from you after you return home, both personally and officially.

Let me emphasize this. It is most appropriate and helpful to our organization, that is, as a Workshop, if you would thank the Commanding Officer of this Laboratory as well as her in separate letters, because he has been most generous, too, in making it possible for her to be the hostess and offering the facilities of this installation. You know her name, of course, and you know where you are now. The official address (and this should come from someone in your military Command - your Commanding Officer, if possible) is: Commanding Officer, U.S. Naval Ordnance Laboratory, White Oak, Silver Spring, Maryland, Attention: Captain R. E. Odening.

This is the time to actually express ourselves. Would you please rise and express your appreciation?

Unless there is any further business, I will hereby declare the active end of this Seventh Workshop.

DISTRIBUTION

	Copies
Chief, Bureau of Naval Weapons Washington, D.C. 20360 Attn: Library	2
Chief, Bureau of Ships Washington, D.C. 20360 Attn: Library	
Chief, Bureau of Naval Personnel Washington, D.C. 20370 Attn: Library	
Chief, Bureau of Yards and Docks Washington, D.C. 20390 Attn: Library	
Chief, Defense Atomic Support Agency Washington, D.C. 22314 Attn: Library	
Boston Naval Shipyard Boston, Mass. Attn: Library	
David Taylor Model Basin Washington, D.C. 20007 Attn: Library	
Naval Air Development Center Johnsville, Pa. 18974 Attn: Library	
Naval Avionics Facility Indianapolis, Ind. 46218 Attn: Library	
Naval Weapons Laboratory Dahlgren, Va. Attn: Library	
Naval War College Newport, R.I. 02840 Attn: Library	
Navy Electronics Laboratory San Diego, Calif. 92152 Attn: Library	

DISTRIBUTION

Copies

Naval Training Device Center
Port Washington, N. Y. 11050
Attn: Library

Office of Naval Research
Washington, D. C. 20360
Attn: Robert Hayes

Naval Explosive Ordnance
Disposal Technical Center
Indian Head, Md. 20640

Navy Department Library
Main Navy Bldg.
Washington, D. C. 20360
Attn: Library

Naval Air Turbine Test Station
Trenton, N. J. 08607
Attn: Library

Navy Underwater Sound Laboratory
New London, Conn. 06321
Attn: Library

Naval Ordnance Test Station
Pasadena, Calif. 91107
Attn: Library

Naval Medical Research Laboratory
Naval Submarine Base, New London, Box 100
Groton, Conn. 06342
Attn: Library

Naval Ordnance Test Station
China Lake, Calif. 93557
Attn: Library

Naval Postgraduate School
Monterey, Calif. 93940
Attn: Library

Navy Mine Defense Laboratory
Panama City, Fla. 32402
Attn: Library

Naval Medical Research Institute
Bethesda, Md. 20014
Attn: Library

DISTRIBUTION

Copies

Director, Naval Research Laboratory
Washington, D. C. 20390
Attn: Library

Naval Observatory
Washington, D. C. 20390
Attn: Library

Naval Missile Center
Point Mugu, Calif. 93041
Attn: Library

Naval Underwater Ordnance Station
Newport, R. I. 02844
Attn: Library

Naval Ordnance Laboratory
Corona, Calif. 91720
Attn: Library

Special Projects Office
Dept. of the Navy
Washington, D. C. 20360
Attn: Librarian

New York Naval Applied Science Laboratory
Brooklyn, N. Y. 11251
Attn: Library

U.S. Naval Academy
Annapolis, Md. 21402
Attn: Library

Naval Oceanographic Office
Washington, D. C. 20390
Attn: Library

Naval Weapons Station
Yorktown, Va. 23491
Attn: Library

U.S. Navy Marine Engineering Laboratory
Annapolis, Md. 21402
Attn: Library

Army Chemical Research and Development Laboratories
Edgewood Arsenal, Md. 21010
Attn: Library

DISTRIBUTION

Copies

Military Assistance Institute
Arlington, Va.
Attn: Library

U.S. Book Exchange
Washington, D. C.

Army Biological Laboratories
Fort Detrick
Frederick, Md. 21701
Attn: Library

Air Proving Ground Center
Eglin Air Force Base, Fla. 32542
Attn: Library

Edgewood Arsenal
Edgewood, Md. 21010
Attn: Library

Department of the Army Library
Washington, D. C.

Air University
Maxwell Air Base, Ala. 36112
Attn: Library

Air Force Weapons Laboratory
Kirtland Air Force Base, New Mexico 8710
Attn: Library

Army Materials Research Agency
Watertown Arsenal
Watertown, Mass. 02100
Attn: Library

Army Engineer School
Fort Belvoir, Va. 22060
Attn: Library

Army Missile Command
Redstone Scientific Information Center
Redstone Arsenal, Ala. 35800
Attn: Library

Harry Diamond Laboratories
Washington, D. C.
Attn: Library

DISTRIBUTION

Copies

Army Command and General Staff College
Fort Leavenworth, Kansas 66027
Attn: Library

Chief, Air Force Libraries Branch
USAF Military Personnel Center
Randolph Air Force Base, Texas 78148

Air Force Institute of Technology
Wright-Patterson Air Force Base, Ohio 45400
Attn: Library

Dominick Coppola
Stechert-Hafner, Inc.
31 East 10th
New York 3, N.Y.

Chief, Technical Information Section
Picatinny Arsenal
Dover, N.J. 07801

Office of the Chief of Engineers
Dept. of the Army
Washington, D.C.
Attn: Library

Army Security Agency
Training Center and School
Fort Devens, Mass. 01432
Attn: Library

Defense Intelligence Agency
Washington, D. C. 20301
Attn: Library

Air Force Flight Test Center
Edwards Air Force Base, Calif. 93523
Attn: Library

Applied Physics Laboratory
Johns Hopkins University
Silver Spring, Md. 20900
Attn: Library

Air Force Cambridge Research Laboratory
Bedford, Mass. 01730
Attn: Library

DISTRIBUTION

Copies

Armed Forces Pest Control Board
Walter Reed Medical Center
Washington, D. C.
Attn: Library

Army War College
Carlisle Barracks, Pa. 17013
Attn: Library

Rome Air Development Center
Griffiss Air Force Base, N. Y. 13440
Attn: Library

Defense Industrial Supply Center
Philadelphia, Pa. 19100
Attn: Library

Army Logistics Management Center
Fort Lee, Va. 23801
Attn: Library

Army Quartermaster Training School
Fort Lee, Va. 23801
Attn: Library

Air Force Systems Command
Foreign Technology Div.
Wright-Patterson Air Force Base, Ohio 45400
Attn: EDP Office

Air Force Office of Aerospace Research
Washington, D. C.
Attn: Library

Defense Supply Agency
Alexandria, Va. 22314
Attn: Library

Technical Information Div.
Oak Ridge National Laboratory
Oak Ridge, Tenn. 37830
Attn: Library

Army Combat Developments Command Ordnance Agency
Aberdeen Proving Ground, Md.
Attn: Library

Army Transportation School
Fort Eustis, Va. 23600
Attn: Library

DISTRIBUTION

Copies

Armed Forces Staff College
Norfolk, Va. 23500
Attn: Library

Photo Interpretation Center
Fort Holabird,
Baltimore, Md. 21200
Attn: Library

Industrial College of the Armed Forces
Washington, D. C.
Attn: Library

Goddard Space Flight Center
Greenbelt, Md. 20770
Attn: Library

Air Force Systems Command
Assistant Director of Procurement
Washington, D. C.

Federal Aviation Agency
Washington, D. C.
Attn: Library

Army Information School
Fort Slocum, N. Y. 10800
Attn: Library

Army Map Service
Washington, D. C.
Attn: Library

Army Natick Laboratories
Natick, Mass. 01760
Attn: Library

Army Signal Center and School
Fort Monmouth, N. J. 07701
Attn: Library

Army Electronic Proving Ground
Fort Huachuea, Ariz. 85613
Attn: Library

Air Force Office of Research Analyses
Holloman Air Force Base, N. M. 88330
Attn: Library

DISTRIBUTION

Copies

Army Cold Regions Research and Engineering Laboratory
Hanover, N.H. 03755
Attn: Library

Watervliet Arsenal
Watervliet, N.Y. 12189
Attn: Library

Air Force Systems Command
Washington, D.C.
Attn: Library

Aeronautical Chart and Information Center
St. Louis, Missouri 63100
Attn: Library

Aerospace Research
Cambridge Research Laboratory
Bedford, Mass. 01730
Attn: Library

Army Waterways Experiment Station
Vicksburg, Miss. 39180
Attn: Library

Dept. of the Army
Office of Research and Development
Washington, D.C.
Attn: Library

Defense Logistics Studies
Information Exchange
Fort Lee, Va. 23801
Attn: Library

Dept. of National Defence Library
National Defence Headquarters,
Ottawa, Ontario, Canada

Dept. of the Army
Adjutant General Office
Special Services Div.
Washington, D.C.

Office of the Chief of Engineers
Dept. of the Army
Washington, D.C.
Attn: Library

DISTRIBUTION

Copies

Aberdeen Proving Ground
Aberdeen, Md. 21005
Attn: Library

U.S. Military Academy
West Point, N.Y. 10996
Attn: Library

Army Military Police School
Fort Gordon, Ga. 30900
Attn: Library

U.S. Air Force Academy
Denver, Colo. 80840
Attn: Library

CATALOGING INFORMATION FOR LIBRARY USE

BIBLIOGRAPHIC INFORMATION

	DESCRIPTORS	CODES		DESCRIPTORS	CODES
SOURCE	NOL technical report	NOLTR	SECURITY CLASSIFICATION AND CODE COUNT	Unclassified - 22	UØ22
REPORT NUMBER	64-98	64ØØ98	CIRCULATION LIMITATION		
REPORT DATE	10 June 1964	Ø664	CIRCULATION LIMITATION OF BIBLIOGRAPHIC		
			BIBLIOGRAPHIC (SUPPL , VOL , ETC.)		

SUBJECT ANALYSIS OF REPORT

DESCRIPTORS	CODES	DESCRIPTORS	CODES	DESCRIPTORS	CODES
Proceedings	PRCD	Publications	REPT		
7th	ØØØ7	1963	1963		
Military Librarians' Workshop	MLWK	Crossfilers	CSSF		
Procurement	ACQU	Tape-typewriters	TTYP		
Information retrieval	IRTR	Standards	STND		
Library	LIBR	Itek Corp.	ITEK		
Operation	OPER	Naval Postgraduate School	NPSC		
Computers	COMP	Defense Logistics Studies Information Exchange	DLSC		
Automated	AUTO	JHU/APL	APPL		
Equipment	EQUI	Naval Weapons Laboratory	NPGA		
Programs	PROG				
Foreign	FORN				

Naval Ordnance Laboratory, White Oak, Md.
(NOL technical report 64-98)
PROCEEDINGS OF THE SEVENTH MILITARY LIBRARIANS' WORKSHOP "PROCUREMENT AND RETRIEVAL - MEETING THE CHALLENGE" (U). 10 June 1964. charts, diagrs.

UNCLASSIFIED

Papers presented at the workshop on library operation make up the proceedings. A panel on the Army STINFO program and one on procurement were important contributions to the workshop. Two sessions were devoted to library operation - one using computer, the other using automated equipment. Questions and answers at the end of the talks are included.

1. Information retrieval
2. Libraries
I. Title
II. Title: Procurement and retrieval

Abstract card is unclassified.

Naval Ordnance Laboratory, White Oak, Md.
(NOL technical report 64-98)
PROCEEDINGS OF THE SEVENTH MILITARY LIBRARIANS' WORKSHOP "PROCUREMENT AND RETRIEVAL - MEETING THE CHALLENGE" (U). 10 June 1964. charts, diagrs.

UNCLASSIFIED

Papers presented at the workshop on library operation make up the proceedings. A panel on the Army STINFO program and one on procurement were important contributions to the workshop. Two sessions were devoted to library operation - one using computer, the other using automated equipment. Questions and answers at the end of the talks are included.

1. Information retrieval
2. Libraries
I. Title
II. Title: Procurement and retrieval

Abstract card is unclassified.

Naval Ordnance Laboratory, White Oak, Md.
(NOL technical report 64-98)
PROCEEDINGS OF THE SEVENTH MILITARY LIBRARIANS' WORKSHOP "PROCUREMENT AND RETRIEVAL - MEETING THE CHALLENGE" (U). 10 June 1964. charts, diagrs.

UNCLASSIFIED

Papers presented at the workshop on library operation make up the proceedings. A panel on the Army STINFO program and one on procurement were important contributions to the workshop. Two sessions were devoted to library operation - one using computer, the other using automated equipment. Questions and answers at the end of the talks are included.

1. Information retrieval
2. Libraries
I. Title
II. Title: Procurement and retrieval

Abstract card is unclassified.

Naval Ordnance Laboratory, White Oak, Md.
(NOL technical report 64-98)
PROCEEDINGS OF THE SEVENTH MILITARY LIBRARIANS' WORKSHOP "PROCUREMENT AND RETRIEVAL - MEETING THE CHALLENGE" (U). 10 June 1964. charts, diagrs.

UNCLASSIFIED

Papers presented at the workshop on library operation make up the proceedings. A panel on the Army STINFO program and one on procurement were important contributions to the workshop. Two sessions were devoted to library operation - one using computer, the other using automated equipment. Questions and answers at the end of the talks are included.

1. Information retrieval
2. Libraries
I. Title
II. Title: Procurement and retrieval

Abstract card is unclassified.