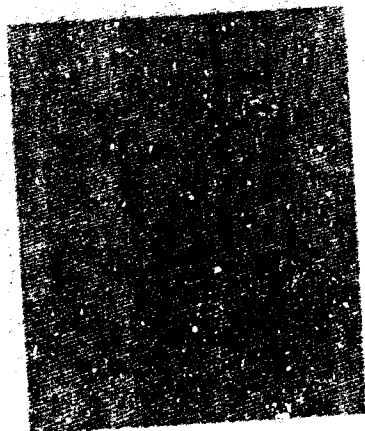


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Technical Report

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MECHANIZATION STUDY
OF THE
ARMY BIOLOGICAL LABORATORIES
TECHNICAL LIBRARY
FORT DETRICK, MARYLAND

Submitted to

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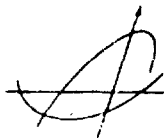
by

Booz, Allen Applied Research Inc.
4733 Bethesda Avenue
Bethesda, Maryland 20014

Under Contract No. DSA-7-15489

BAARINC Report No. 914-1-4

September 1966



BOOZ-ALLEN APPLIED RESEARCH INC.

WASHINGTON
CLEVELAND
CHICAGO
LOS ANGELES

A B S T R A C T

The Technical Information Division of the U. S. Army Biological Laboratories has three mechanized programs: Selective Dissemination of Information (SDI), Serials Processing System, and Retrospective Search File. The SDI Program uses magnetic tapes from the National Library of Medicine to generate monthly lists of journals and monographs that match the interest profiles of participating scientists. The Serials Processing System provides a list of the journal holdings for periodical control. The Retrospective Search File of about 8,000 document records is used for bibliographic searches, for inventory control, and to produce book catalogs and accession lists. Input to this file is confined to Fort Detrick and contractor reports. All three program systems are run on the UNIVAC SS-II computer. A new unit record, comparable to DDC's record, is planned for the Retrospective Search File. The SDI Program is expected to grow to about 350 participants, and information from Biological Abstracts and similar publications will be added to the input citation files.

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II.

III.

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I. SUMMARY

The Technical Information Division at Fort Detrick has three mechanized programs: Selective Dissemination of Information (SDI), Serials Processing System, and Retrospective Search File. The SDI program uses magnetic tapes from the National Library of Medicine (NLM) to generate monthly lists of journals and monographs that match the interest profiles of each of 40 participating scientists. The Serials Processing System provides a list of the journal holdings for periodical control (check-in, routing, renewal, etc.) The Retrospective Search File, which currently contains about 8,000 document records indexed by accession number and subject word descriptors, will be used to perform information search and retrieval, inventory control and to produce accessions lists and book catalogs. All three systems use specially developed programs that are run on a UNIVAC SS-II-90 computer.

Appendix A indicates the position of the Technical Information Division within the U. S. Army Biological Laboratories at Fort Detrick. The Division serves approximately 2,500 personnel at Fort Detrick; thirty percent are scientists and engineers who represent the primary user population. The collection consists of about 50,000 books, 1,100 periodical titles, and 47,000 documents (including laboratory notebooks)

with an annual growth of 1,200, 150, and 5,600, respectively. The collection is primarily in the fields of biological and medical sciences, with agriculture, chemistry, military sciences, and atmospheric sciences following in order of importance. These five subject groups account for 61 percent of the books and periodicals and 78 percent of the documents.

All of the materials are now in hard copy, but it is anticipated that microform will be introduced in approximately two years. A typical month's circulation is about 2,200 books and periodicals and 590 documents.

All of the book processes are manual although the ordering of books is expected to be mechanized in FY 1967. A Flexowriter is used to produce catalog cards for documents that are now indexed with subject terms from a thesaurus developed by General Electric. These subject terms are also being used in indexing the documents for the development of the Retrospective Search File. About 25 percent of the document collection has been descriptive-cataloged by a contractor and has been filed in the computer on magnetic tape.

II. MECHANIZATION

1. CHRONOLOGY

In January 1962, formulation of a Retrospective Search File began with discussions concerning the handling of technical documents. The purpose of the discussions was to find ways of improving the services offered by the Technical Information Division. As a result of these discussions, an ad hoc committee was convened consisting of five experts in information retrieval who were concerned with the retrieval program at Fort Detrick.

In June of the same year, the document "The Biological Laboratories Information Retrieval Program" (AD#277544) was published by this ad hoc committee. This document discussed the problems, facilities, and work of Fort Detrick and presented comments on these by the five committee members.

The task of creating the thesaurus and cataloging the document file was contracted out. In June 1963, the first progress report was issued describing the initial efforts at cataloging Fort Detrick's document file.

In November 1963, staff members from the Information Division and the Biomathematics Division visited the libraries at Redstone,

Picatinny, General Electric, and other locations to observe existing mechanized techniques.

In mid-1963, the "STINFO File Maintenance" document was issued describing the techniques to be used in creating a mechanized retrospective search system.

In the fall of 1964, contract was let for the development of the SDI and Serials Processing System programs. In May of the following year, contractor delivered the SDI and Serials Processing programs and evaluation of these began.

All three program systems were subjected to an extensive evaluation in the summer of 1965, and that fall, all three programs entered the operational phase.

2. SDI PROCESSING

A machine-readable magnetic tape, known as the Retrieved Citation File (RCF), is received monthly from the NLM's Medical Literature Analysis and Retrieval System (MEDLARS) identifying the month's yield of U S. and foreign-produced journals and monographs indexed with appropriate medical subject headings. In addition, another tape of Medical Subject Headings (MESH) is received annually from NLM which is a machine-readable thesaurus of subject tags. These two

tapes are combined in the computer with a locally produced tape of participants' interest tags, and a printout of selected journal citations results for each individual. Figure 1 illustrates the logical flow of the overall SDI system and the following is a detailed description.

(1) Input Procedures

1. Participant submits his interest profile which consists of his name, address, up to 10 languages of interest, and any number of interests using up to 400 medical subject tags to describe an interest. This may be updated at any time with additions, changes, or deletions. In order to refine the participant's interest profile so that a useful selection of citations can result from it, the Information Division spends a considerable amount of time in personal conference with the individual and in keeping records of what notifications he received, what he wanted, and why.

2. The participant's profile is punched on four EAM cards, one each for name, address, language, and interest. The format for these Profile Action Cards is given in Appendix B-1. A description of these cards is given in Appendix B-2.

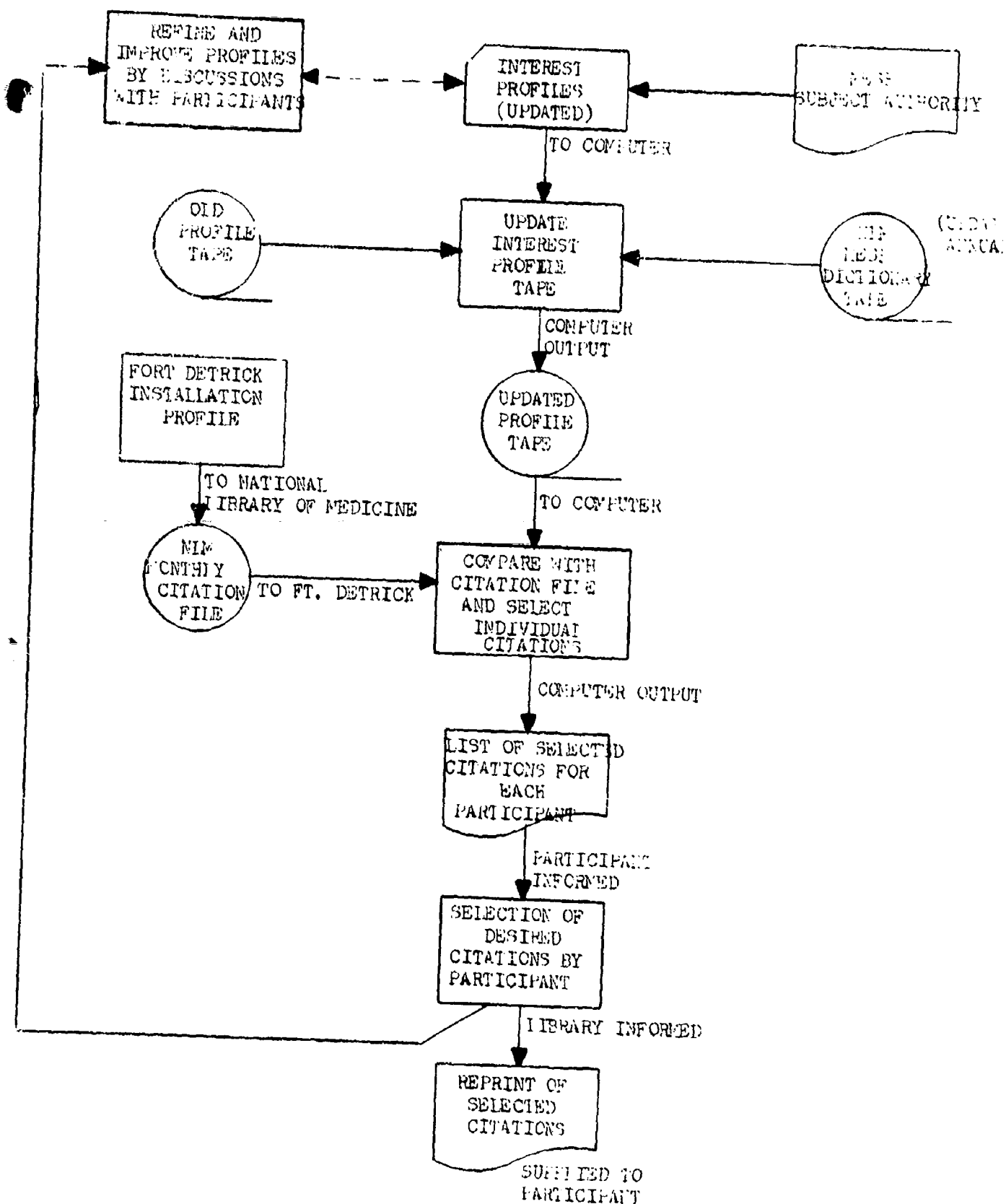


FIGURE 1

Selective Dissemination of Information
System at Fort Detrick

3. EAM card information is applied in the computer to update the cumulative Interest Profile Tape File of all participants. A printed profile status report indicating participants' response to selected citation notifications results at this point as part of the updated profiles.

4. Profile interest tags of all participants are then run with the MEDLARS MESH tape to code and reformat the profile tags according to MESH.

5. The reformatted interest tags are then run with the Retrieved Citation File tape, and a printout on a dual 3 x 5 notification card of selected citations for each participant is made. Citations will be selected based on the weight method. This method uses "weight" numbers for each of the participant's selected interest tags. In a citation descriptor tag-profile interest tag match, the pre-assigned weights of the matched tags are added up. If the sum equals or exceeds 10, a program constant, then the citation is listed for the individual's attention. Certain tags may be listed as MUST or NOT, and in this case, the indicated action is taken without regard for weight. If a

match is found and the tag is a MUST, the citation will be selected regardless of weights or percent of matches. If a match is found and the tag is a NOT, the citation will be bypassed. The NOT operation overrides all other considerations including the MUST.

Formerly the MAY method was also a selection option, but it is no longer used because of its relatively poor discrimination. The MAY method determines the citation descriptor tag - interest profile tag matches as a percent of either the total number of descriptor tags per document or profile tags per individual, whichever is less, and compares this percentage to a percentage factor predetermined by the participant. If a percent figure higher than this factor results, then the citation is listed for the participant's attention. Once a citation has been selected on the basis of a particular interest it will not be matched against any other interests for the same participant. Thus the notification cannot be selected twice. (If a participant's entire profile contains in excess of 400 tags, it is possible to make more than one selection of a citation since in this case the program would make a second search of the citation file and would not keep track of citations selected during

the first search). If it happens that a citation does meet the selection criteria for more than one interest of a participant, only the tags of the interest causing selection will appear on the notification card.

(2) Outputs

1. Interest Profile Status Report

This output is produced when a participant's interest profile is updated. As shown in Appendix B-3, it identifies the participant and lists his language, interest number, interest tag numbers, weight, and tag words.

2. Notification Form

Selected citations are printed on the notification form shown in Appendix B-4. Each citation is listed with the identification of the participant and the tags that caused its selection. This form is sent to the participant for his perusal and selection of desired items. He returns part of the form to the Information Division indicating his interest in each citation.

3. SDI Statistics

This output is a compilation of a participant's number of notifications, responses, and type of response in both this

period and last. It is used to assist in the improvement of the interest profile and to keep track of the effectiveness of the system. An example of the form is shown in Appendix B-5.

3. SERIALS PROCESSING SYSTEM

The Serials Processing System maintains a master file of serial holdings. Working with the master file, the program supplies the Information Division with requisition and control tools for the collection. Records are updated, added to, or deleted monthly or otherwise as required.

(1) Inputs

1. Transaction Cards

For each serial to be entered into the system, six EAM punched cards called transaction cards are prepared. The format for the six cards is given in Appendix C-1.

The six cards are linked together by a unique title code that fills the first five columns of each card. All five characters of this code are based on the alphabetic sequence of the serial title. The only card necessary to generate a basic serial record is a Number 1 card. The

remaining five cards are used to supply information for the record, depending on the amount of information desired or available. A record used as cross-reference needs only a number 1 and a number 5 card. When completed, these cards may be submitted in any order in a normal updating procedure.

A complete record may be removed from the computer master file by submitting a number 1 card with the title field blank. All frequencies have a unique, four-digit code that is punched in columns 46-49 on card number 4. A binary number system is used to reduce three-digit numbers to one digit. This allows any combination of monthly delivery to be converted to a four-digit number.

Weeklies have "80" in the first two positions with the date of the first issue of the current month in the last two positions.* Biweeklies have "81" in the first two positions and the date of the current month's first issue in the last two positions. Semi-monthlies have "8200" for a frequency code. Issues that are not under card control are "3300." Serials with an unknown frequency or with a publication less than once a year are "9000."

* For example: A weekly that is to be entered in May 1965 and is issued on Monday would have 8003 for a frequency code.

2. Date Cards

For the computer runs that produce outputs, a date card is required. This card has the previous month and year punched in full in columns 1-20, left justified, and the current month and year in columns 21-40, left justified. Columns 46-55 contain the month and year number (e.g., 0165) for the previous month with the present month and year in columns 56-65.

3. Index Cards

When the card for the last issue in a volume is punched, a card for the index of that volume is also punched. Columns 1-5 contain the title code. Columns 6-45 and 46-75 contain the words "Index For" and the appropriate title. In columns 80-83 is the volume number. Column 85 has the number "7." When the index is received, separately or contained in an issue, this card should be entered as a Transaction Card.

4. Last Cards

A "last card" is also required to stop the process of the computer programs. This card has 9's punched in the first 10 columns.

5. Routing File Cards

A routing list for the serials is available from the computer. For this listing, a card for each recipient of a serial must be punched. Columns 1-5 contain the title code of the serial. Columns 11-40 contain the name of the recipient. Two rows are provided for the address of each recipient. The first row of the address is punched in columns 46-65; the second row in columns 66-75. An asterisk is punched in column 10 to start a list for each issue to be routed. This list will continue printing the names from the cards until another plus is detached or the title code changes. Columns 76-79 contain the sequence number of the card under its title code. Blocks of 10 spaces are left between sequence numbers to allow additions to the file.

6. Counter Resetting Cards

Three counters in the computer, referred to as NRCT, GRCT, and ISSREC, keep track respectively of the number of issues published in a volume, the number published since the last binding, and the number received since the last binding. When the counting in any of these three areas is complete, the appropriate counter must be reset to zero in preparation for starting a new count. This is done by

supplying a counter resetting card. This card contains the title code in columns 1-5. Zeros are punched in columns 6-7 for the ISSREC counter, in columns 8-9 for the GRCT counter, and in columns 10-11 for the NRCT counter. An index indicator* is contained in column 12. An "8" is punched in column 35. This card is then entered following other cards of the same title code for normal computer operations.

(2) Outputs

From these records, the computer programs of the Serials Processing Program produce the following outputs:

1. Cumulative Serial Holdings

From the master file, a cumulative list of serial holdings is printed as shown in Appendix C-2. This is an alphabetical listing of titles, including for each title a record of volumes and years the title was held by the Information Division, whether it is bound or unbound, its storage location, and notes as to change of titles, ceased publication, and special procurement problems. The list provides to users a centralized checklist of what is

* On each serial record is an index indicator. A "2" in this indicator means the index card for a volume has been received. A "1" means the serial is due to be bound, but the index has not been received. A "3" means binding is overdue, and the index has been received.

available in the Information Division and also provides the Division staff with data to answer queries concerning the collection.

2. Serial Control Cards

At the beginning of each month, the Information Division receives from the computer section a set of punched cards, as shown in Appendix C-3, representing the issues of periodicals that are to be received that month. The cards are based on a frequency code built into the master file indicating frequency and expected dates of the individual issues. As each issue is received, the card for that issue is pulled from the set and returned to the computer section where it is used for publishing the Cumulative Monthly Accessions List. The cards that have not been pulled by the end of the month form the basis of a recall list that is used to notify suppliers of the shortages.

3. Serial Expiration List

The Serial Expiration List, illustrated in Appendix C-4, is a computer listing of periodical subscriptions due to expire and is used to initiate renewals. The list

is arranged by renewal date and includes the supplier and titles in alphabetical order. The division that receives the periodical is also indicated as are the original purchase order number and item number of the title. When all the titles on a list are renewed, the list is then used to update automatically the master files.

4. Serial Supplier List

To aid the Information Division both in placing new subscriptions and renewing old ones, a Serial Supplier List (Appendix C-5) is made that includes all the suppliers, their complete addresses, titles of the periodicals received from each supplier, division of Fort Detrick to which the periodical is to be forwarded, and cost of the periodical.

5. First Copies List

When the first issue of a new periodical is received in the Information Division, this information is provided to the computer via EAM punched cards prepared for the new issue. A First Copies List (Appendix C-6) is then printed monthly by the computer for new periodicals, giving title,

issue, and date. This list is used for receipt reports and subscription payments. The punched cards are also used to update the master file.

6. Serial Routing List

For each expected issue, the computer prints out monthly (or otherwise as required) a Serial Routing List giving the names and addresses of users who wish to see the issue. When the issue is received, this list is attached and circulated with it.

7. Cumulative Monthly Accessions List

Punched cards, pulled upon receipt of periodicals during the month, are returned at the end of the month for a computer printout of the Cumulative Monthly Accessions List. This list, as shown in Appendix C-7, is arranged alphabetically by title and indicates the volume number, issue number, and date received. The punched cards are then used to update the master file.

8. Binding List

The Binding List is produced monthly when the master file indicates that all expected issues and indices

of completed volumes have been received. The list is arranged alphabetically by title with the volume number and number of copies to be bound indicated. It is used by the Information Division staff to pull appropriate issues for forwarding to the bindery.

4. RETROSPECTIVE SEARCH FILE PROCESSING

Approximately 8,000 documents, consisting of Fort Detrick and contractor reports, have been indexed by accession number and coded descriptors and placed in a mechanized Retrospective Search File for machine search and retrieval procedures. The index and the subject term thesaurus were each entered on paper tape by a contractor, and these two tapes form the inputs to the mechanized file in the UNIVAC SS II-90. The thesaurus was developed from interviews with Detrick staff members, other thesauri, the open literature, and the document indexing process. Three pages from corresponding sections of the thesaurus are shown in Appendix D-1. The first two sections consist of descriptors structured by levels of subject generality and the third lists descriptors alphabetically, giving their corresponding location in the first part.

(1) Maintenance and Updating

The steps involved in maintaining and updating the Retrospective Search File are as follows.

1. Input Procedures

- (1) New document references are added to the file by preparing a punched paper tape called a correction tape.

The tape will contain a five-digit accession number followed by five spaces. Then the five-digit numerical descriptor codes will follow, each separated by a comma. The last descriptor pertaining to an accession number will be followed by two carriage returns and the next entry (if any). This format is the same as that used in the original file creation.

- (2) An existing document entry may be replaced by punching the new entry on the correction tape in the same format described in step 1.
- (3) If a reference is to be deleted, the correction tape will be supplied with only the accession number of the reference. It is not necessary to arrange the tape in accession number order in steps 1, 2, or 3.
- (4) When the correction tape is completed, it is ready to be applied to the computer for updating the Retrospective Search File. The computer process is described in the Program System Data section.
- (5) Thesaurus additions are punched on a correction tape that is separate from the document reference correction tape. Its format is the five-digit numerical descriptor code, followed by five spaces, followed by the English descriptor. If the descriptor is more than one word, each word is separated by a space. Each code - descriptor entry is separated from the next by two carriage returns.

- (6) A thesaurus entry already on the file may be completely replaced with a new entry by punching the entry on the correction tape in the same format described in step 5.
- (7) To delete an existing thesaurus entry, only the numerical code of the descriptor to be deleted is punched.

2. Outputs^{*}

(1) Sequential Accessions List

This form of accessions list is produced each time new document references are added to the mechanized file. It is sequential by accession number and is an index of new accession numbers with document descriptor terms. Appendix D-2 is an example of this list.

(2) Sequential Accessions Catalog

This catalog is similar to the Sequential Accessions List except that it is a listing of all documents in the file.

(3) Inverted Accessions List

This accessions list is the same as the Sequential Accessions List except that new documents are listed by descriptor terms rather than accession numbers. Thus it forms an index of subject terms cross-referenced to accession numbers. An example is shown in Appendix D-3.

(4) Inverted Accessions Catalog

The Inverted Accessions Catalog is arranged in the same manner as the Inverted Accessions List except that it is a complete listing of old as well as new accessions. It is essentially the subject catalog of all reports in the Information Division

* None are fully operational.

collection and allows retrospective subject term searches of material incorporated into the system. As in the case of the Inverted Accessions List, the subject being searched leads to accession numbers by which reports can be withdrawn from the Division collection. The catalog is produced every three months.

(2) Retrospective Search and Retrieval

To illustrate the search and retrieval system, the Technical Information Division has given the following example:

"Consider the case of a scientist coming to the Library looking for information as background for research. His initial statement is 'I need information on culturing Brucella organisms.' After discussion with the librarian, the finalized question which enables the librarian to best serve the scientist's need is as follows: What procedures have been used at BioLabs for the identification of Brucella suis, excluding work in the field? This natural language question must then be converted by the librarian to the form required by the computer system. On the paper tape fed into the computer, only descriptor codes are used. However, we will show the English language descriptors here. The requirements determined by the librarian are: The document must contain Brucella suis, and in addition, it must contain at least one of detection, identification, isolation, differential, or culture. The document will be

excluded from consideration if it contains reference to field tests and/or field operations. This, then, constitutes a 'typical' request and is the basis for our demonstration of the information retrieval system."

In general, the following types of search questions may be accommodated by the computer program for retrieving document references contained in the Retrospective Search File.

1. (A, B, C, . . . n) A request for all documents having all descriptors, A and B and C, etc., (maximum of 20) appearing together.
2. (x, D, E, F, . . . n) A request for all documents having x or more (maximum of 5) of D, E, F, etc., appearing together. For example, if x is given by the requester as 2, then the request is for any two of D, E, F, etc., (i.e., D and E, or D and F, or E and F.)
3. (-I, J, . . . n) A request for documents not having descriptors I or J or etc., appearing.
4. (-x, K, L, M, . . . n) A request for documents not having x or more (maximum of 5) of K, L, M, etc., appearing together as in item 2 above.

The above criteria may be assembled together as desired, but only in an AND relationship. For example, the specification (A and B and C) and (2 of D, E, or F) is allowable, but (A and B and C) or (2 of D, E, or F) is not allowed in a single search.

The latter specification would require two independent searches: first excluding the second specification, and the second excluding the first. Note that multiple searches, since they are mutually independent, may result in redundant selections.

1. Input Procedures

The following describes the search procedure:

- (1) The requester submits his name, organization, and search specification.
- (2) The requester's search specification is reduced to descriptors in the form described above. The query format is fixed as indicated, i. e., all descriptors which MUST be associated with the document are recorded first, then the either/or combinations preceded by the number of permissible combinations, and finally the negative groupings with applicable combination numbers. The first category may include up to 20 descriptors, the second up to 10 combinations of no more than 5 descriptors, the next, which is the first part of the negative grouping, may have up to 20 individual descriptors, and the last part of the negative group may have up to 10 combinations of no more than 5 descriptors.
- (3) The refined request is punched on paper tape in the form indicated in Appendix D-4 with an ampersand, request number, name and address of the requester, and other desired information. The above must be followed by two carriage returns. Next the MUST descriptors follow without punctuation of any kind. The

limiting number comes next with its associated descriptors. The limiting number must be preceded by a slash and followed by a comma. After the comma, the descriptors follow without punctuation. At the end of a group of descriptors will be a period. If there is another group, it starts with the limiting number following the period.

Once all groupings of this nature are entered, it is time to enter the negation descriptors preceded by a dash. Following the dash are the single negation descriptors. Next comes the limiting number preceded by a slash and followed by a comma. After the comma, the descriptors follow without punctuation. At the end of a group of descriptors will be a period. If there are more groups, each the limiting number following the period. The last group will be followed by two carriage returns. Each descriptor (letter in the example) is replaced with its five-digit numerical code. If more than one search request is listed, each is separated from the next by two carriage returns. The final search request is followed by two carriage returns and a stop code.

- (4) The prepared paper tape is then applied to the computer where the information is run with the stored document descriptor file to determine accession numbers of documents which meet all of the specified conditions.

2. Output

At the end of the program, a listing of these numbers is printed out with the requester's name and organization as shown in Appendix D-5. If more than one search request is involved, the accession numbers for each request will be

listed separately. The list or selected documents is then delivered to the requester.

5. ACTIVITIES BEING PLANNED OR DEVELOPED
FOR MECHANIZATION

The SDI system is expected to grow from the present 40 participants to about 350, and information from Biological Abstracts and similar organizations will be added to the input citation files.

A Technical Effort Locator File will be established for on-post workers, with effort profiles to be based on the subject term thesaurus. DoD Form 1498 will be used for reporting R&D project activity. This form will include descriptors, subject, objective, approach, results, funding, man-years expended, etc.

The Retrospective Search File input will continue to be confined to Fort Detrick and contractor reports. However, reports from other activities may be incorporated if money for contracting the necessary indexing effort is made available.

A new unit record, comparable to DDC's record, is planned for the Retrospective Search File. It will consist of title, abstract, author, descriptors, etc., and will be used to update the search file.

produce demand and recurring bibliographies, and produce a book catalog divided by accession number, descriptor, corporate author, and personal author, etc. (The Information Division estimates that working with DDC saves them three man-years. As the relationship and service improves, greater savings are anticipated.)

When DDC begins operation of an SDI program, the Information Division is planning to send taped interest profiles of Fort Detrick personnel for inclusion in the DDC dissemination.

A plan for mechanizing the handling of monographs will await Library of Congress work in this area. The system is anticipated to be similar to the Serials Processing System.

The Information Division hopes to acquire a chemical symbol producing typewriter that can be driven by the computer printout program.

Plans have been made to expand the mechanized document record to include title, abstract, author, etc., and not to use such functions as carriage returns, spaces, punctuations, etc., but rather to use codes to accomplish segregation.

III. PROGRAM SYSTEM DATA

I. SDI

The SDI System compares a participant's interest profile tags to the MEDLARS Dictionary (MESH) and Retrieved Citation File Tapes. Each month, matches meeting criteria specified by a user are printed together on a form for the user's notification. Response to this notification is fed back to update the user's interest profile. Figure 2 is a system diagram of the SDI System.

(1) Major Files

1. Interest Profile Tape File

The format for one record of this file is shown in Appendix E-1. There is at least one record per participant and these are sorted on the tape by participant number. If a participant's interest tags exceed the allotted space, a continuation is started on a second record at 003.

2. Profile Action Cards

These cards are the main input to the Interest Profile Update run. They are updated on a continuing basis as new cards are supplied from the Technical Information Division. Appendix B-2 contains a complete description of these cards.

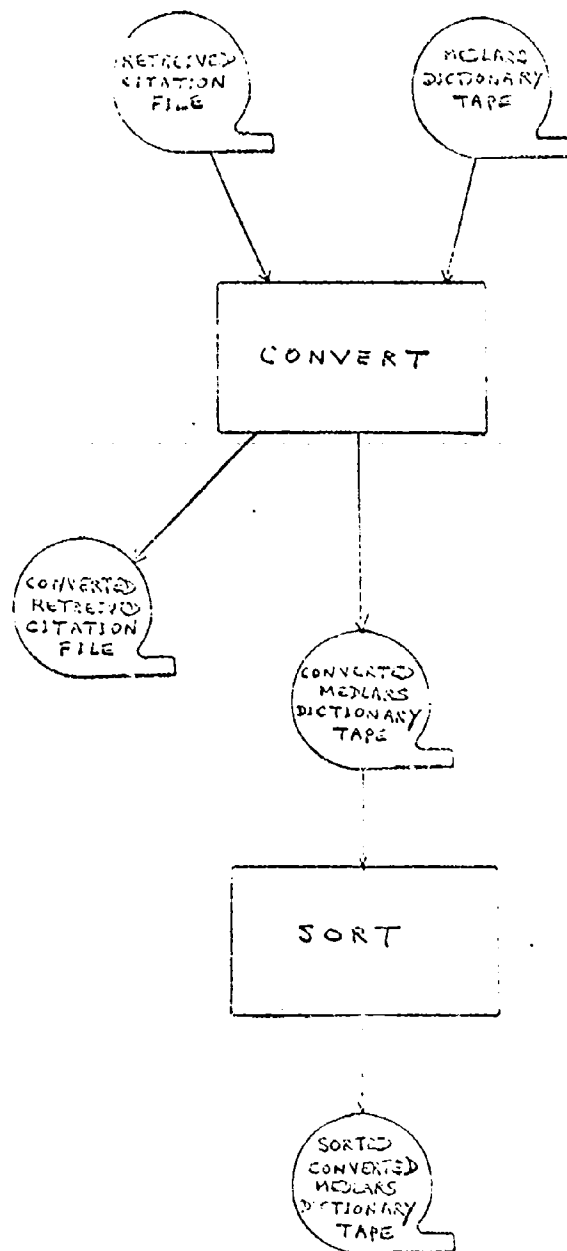


FIGURE 6
SDI System

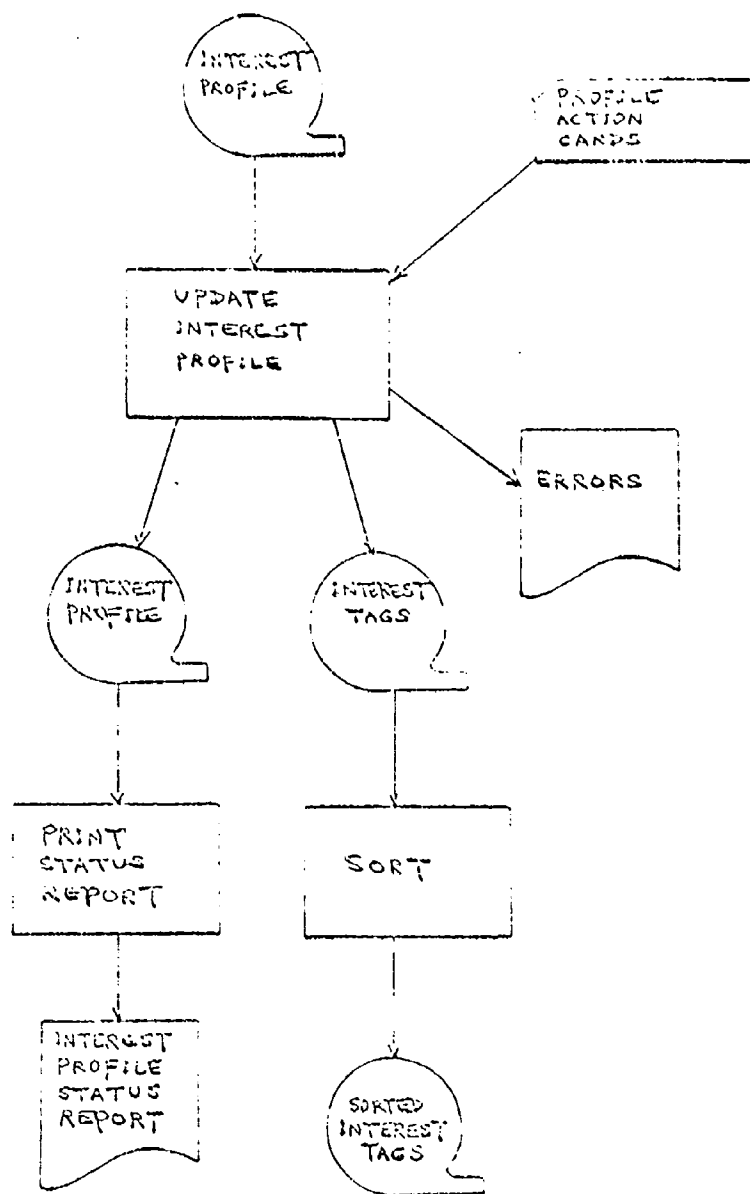


FIGURE 2 (continued)

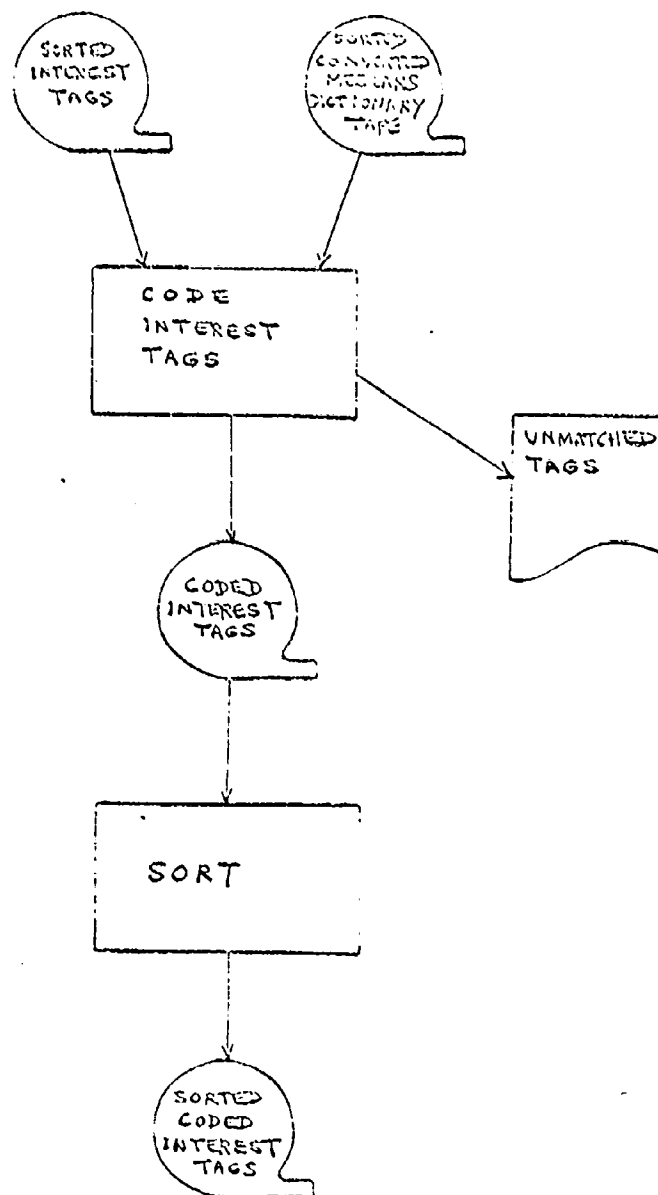


FIGURE 2 (continued)

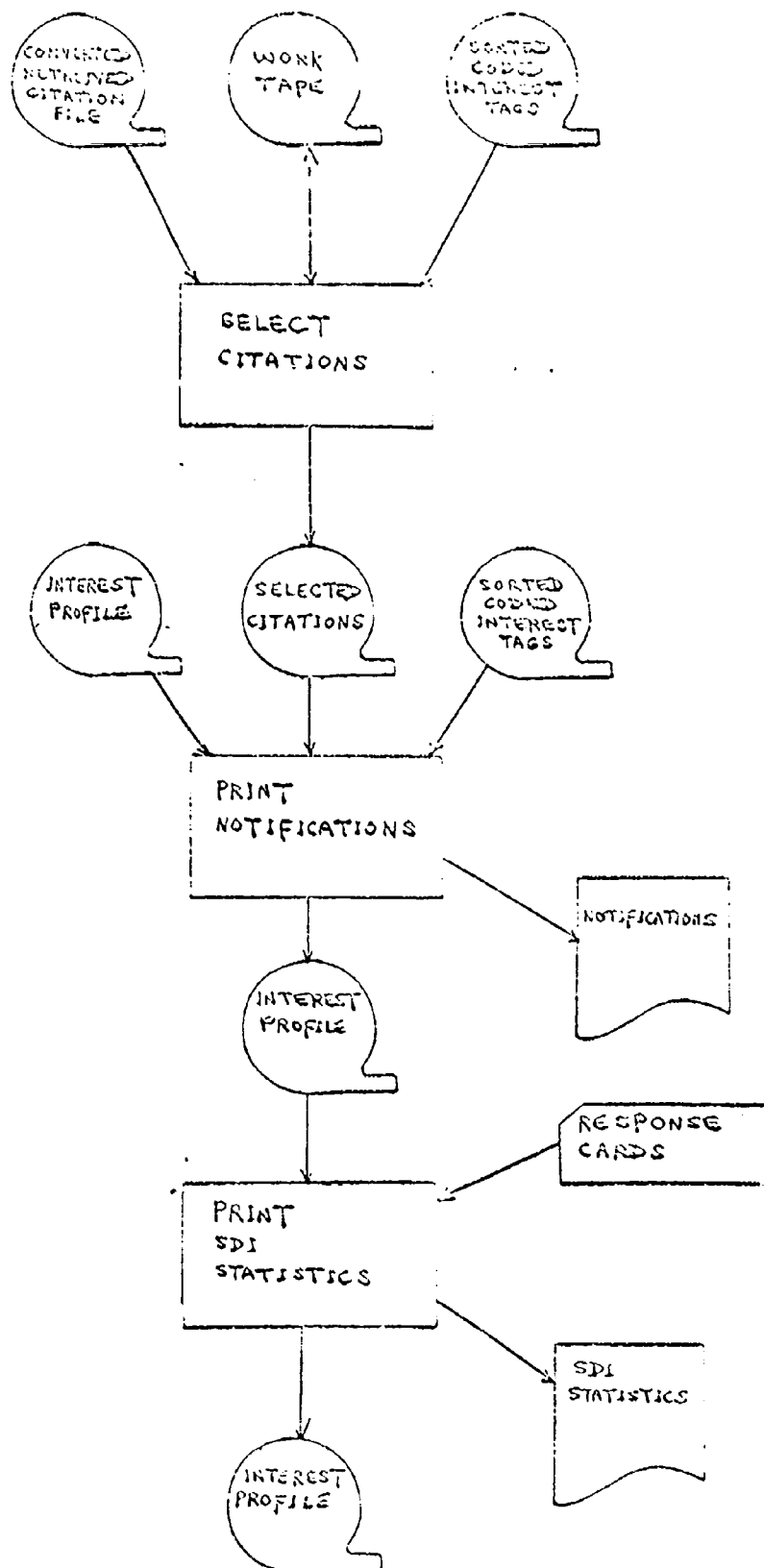


FIGURE 2 (continued)

3. Interest Tags Tape File

This file is an output of the Interest Profile Update run. It is also the main input to the remaining parts of the SDI program. A format of one record is shown in Appendix E-2.

4. MEDLARS Dictionary Tape File

The Dictionary Tape is provided yearly by the National Library of Medicine as a list of proper main subject headings. It is used to identify errors in the Interest Tags File. Its format must be converted from seven records per block (720-character block) to ten records per block (1,000-character block). Appendix E-3 illustrates the record format.

5. Retrieved Citation File Tape

This tape is received monthly from MEDLARS, and its information is used as the second main input to the Select Citations Run. It requires conversion from one record per 720-character block to two 500-character records per 1000-character block. A record format is illustrated in Appendix E-4.

6. Coded Interest Tags File

The Interest Tags Tape File and the MEDLARS Dictionary Tape File are combined to produce the Coded Interest Tags File. The format of this file is shown in Appendix E-5.

7. Selected Citations File

This file is the output of the Select Citations run. It is the input to the Print run which produces the selected citation listing for the participant whose Profile Action Cards were used earlier in the program. The format of the file is shown in Appendix E-6.

(2) Programs (Detailed flow charts of the programs may be found in Bibliographic Reference 2.)

1. Convert Retrieved Citation File and MEDLARS Dictionary Tape

The purpose of this run is to convert the Citation File Tape and the Dictionary Tape from a format of 720 characters per tape information block to 1,000 characters per block in the standard USS II interlace format. The Citation File containing one 720-character record per block is changed to two 500-character records per block,

and the Dictionary with seven 100-character records per block is changed to ten 100-character records per block. Generally, one record equates to one citation, although in the case of a large citation, more than one record may be required.

2. Sort Converted MEDLARS Dictionary Tape

This run sorts the Dictionary Tape records (10 records/block; 10 blocks/tape) into sequence by English main heading of the medical subjects. The sort program used has fixed parameters and is common to all sort runs on the SDI Master Instruction Tape.

3. Update Interest Profile

Using Action Cards and the latest Interest Profile Tape, this run creates and maintains an updated Interest Profile Tape for each participant in the SDI system. In addition, it produces a tape of interest tags to be used in other runs, and a printout of errors. An explanation of the MAY and WEIGHT methods of establishing citation selection criteria may be found on pages 7 - 9.

4. Print Interest Profile Status Reports

This program utilizes the current Interest Profile Tape and a date card (date punched in columns 1-20) to point out a list containing participant number, name, and address, languages, and interest tags. Appendix E-9 illustrates this run.

5. Sort Interest Tags

Utilizing the common sort program, this run sorts the tapes of interest tags generated in the Update Interest Profile program into sequence by English interest tag. Each tape information block contains 10 records.

6. Code Interest Tags

The purpose of this run is to reformat the sorted interest tags (10 records/block). Matching the tags and the Dictionary with a date card produces coded Interest Profile Tags and a printed listing of tags that do not match the Dictionary.

7. Sort Coded Interest Tags

The sort program is applied in this run to arrange the coded Interest Tags into sequence by participant number, interest number, and tag number.

8. Select Citations

This program matches the sorted coded Interest Tag File tape against the Retrieved Citation File tape to select citations based on the WEIGHT method of selection. One or more comparison passes will be made depending upon whether the total number of user interest tags is less or greater than four hundred. Output of this program will be the Selected Citation File tape. For each selected citation (record number 1), a record will be written (record number 2) containing the interest tag codes that caused the selection.

9. Print Notifications

This run combines the tapes of the user's Interest Profile, the Selected Citations, and the Sorted Coded Interest Tags to produce a new tape of the Interest Profile updated with the number of notifications printed, and a printed notification of selected citation.

10. Print SDI System Statistics

This program prints a report of the number of notifications in the current period, the number of responses (classed by type) for the last period, and the total notification and responses to date. In addition, it updates the Interest Profile for use in the next SDI cycle. Inputs to this program are the updated Interest Profile from the notification program, the response cards, and a date card.

2. SERIALS PROCESSING SYSTEM (Detailed flow charts for these programs may be found in Bibliographic Reference 3.)

The Serial Processing System was devised to mechanize the recording and control of serial publications. Twelve modular programs are employed using punched cards input, magnetic tape for master file storage, and printed page copy as the primary output. The basic input is a punched card, called a Transaction Card, which represents a new receipt and which carries serial record information. The programs making up the system are contained together on a single magnetic tape, but new programs may be addressed and brought into use as needed. All programs are not used on a monthly basis as some provide information that is unchanged from month to month.

(1) Major Files

Appendix F-1 illustrates the various tape files used with the runs. All programs are on a master instruction tape, titled the "Systems Tape." The main data file is contained on the "Master Tape" which is updated by the "Transaction Tape." The formats for these files are illustrated in Appendix F-2.

(2) Programs

Figure 3 is a system diagram relating the following 12 programs

1. Cumulative Monthly Serials Accessions

This program compares the old accessions tape to the monthly transaction tape to produce a printed list and a tape of the most recent accessions by title, volume, issue number, and date (read from a date card).

2. Update Master File

This program updates the Master File with the information contained in the latest sorted transaction tape.

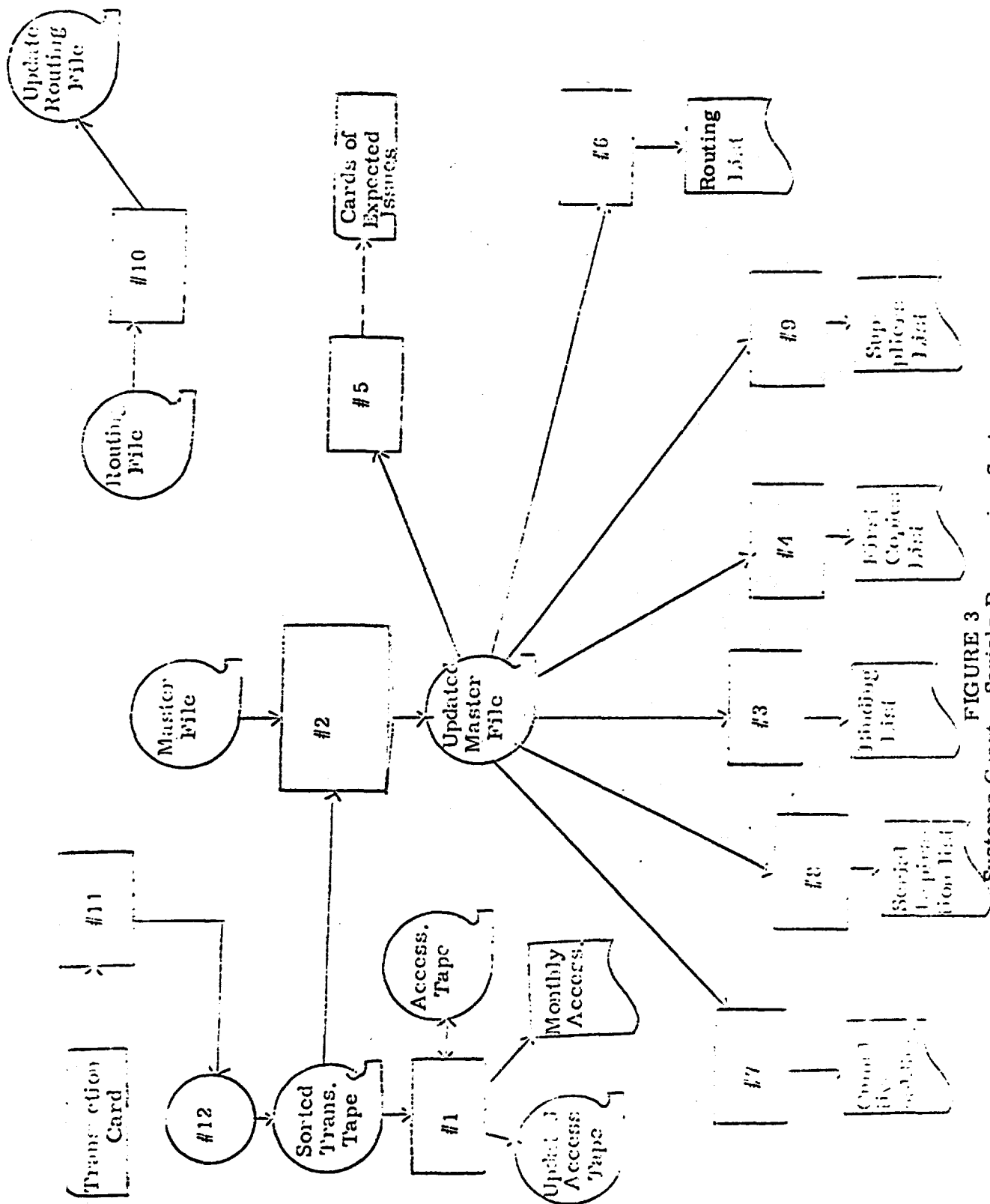


FIGURE 3
Systems Chart - Serials Processing System

3. Print Binding List

A list of serials due to be bound is produced in this program from information contained in the updated master file.

4. Issues Received Beyond Expiration Date

The purpose of this run is to produce from the updated master file a page-printed list of subscriptions, the first copy of which has been received, containing the contractor's name, address, the P. O. number, the title and the location.

5. Cards of Expected Issues

This program punches transaction cards with master file information of title, title code, number of copies expected, volume number, issue number, and transaction code for all issues expected in the following months.

6. Routing List

A routing list is generated from the master file by this program containing the title, volume number, issue number, date, and the recipient for expected issues.

7. Cumulative Serials Holdings

This run produces a printed cumulative list of the Informa Division's holdings, giving title, location, frequency, issue, and cross-reference information, as recorded on the master file.

8. Serial Expiration List

This run produces a printed list of serials showing renewal date, contractor, P. O. number, title, and location.

9. Serial Supplier List

A printed list of all contractors with their address and P. O. numbers is produced by this program from the master file.

10. Create Routing List

This run creates a routing list for each copy of expected issues with date, volume, issue, and each recipient's name and address. The input is the old Routing List tape and the routing card, sorted by title code and sequence number.

11. Edit Transactions

This program loads and edits the transaction cards on tape to be used later to update the master file.

12. Sort Transaction Tape

This run sorts the loaded transaction tape produced by program number 11.

Programs 1 through 6 represent a primary update program grouping which is run only once a month to preserve accurate counter data. Appendix D-4 illustrates the tape configuration for this program group. Programs 7, 8 and 9, on the other hand, do not effect the record fields and therefore may be used any time. Programs 10 and 11 are used as the system demands. A normal monthly routine is:

- (1) Create transaction tape with Edit Transaction Program, (program number 11).
- (2) Sort transaction tape (Program number 12).
- (3) Mount transaction, monthly accessions, routing list, and master file tapes. Provide date card and run programs 1 - 6.

(4) Label and date new monthly accessions and master file tapes and save for next month's run as well as routing list tape. Interpret punched cards and send to Technical Information Division.

3. RETROSPECTIVE SEARCH FILE

The Retrospective Search Program produces a list of pertinent bibliographic document references in response to query descriptors loaded into the computer. Operations with the Search Program may be separated into three areas:

- . Loading and updating the thesaurus file
- . Loading and updating the document file
- . Retrospective searching

Figures 4, 5, and 6 illustrate the three corresponding systems.

(1) Major Files

1. RANDEX Drum File

This file contains the thesaurus and document files in an interlace of blocks. The arrangement of one block is as follows:

<u>Word Number</u>	<u>Information (10 Digits)</u>	<u>Form</u>
1	Descriptor Code	Numeric
2	Descriptor	Alphabetic
9	Descriptor	Alphabetic
10	Total Number of Accession Numbers	Numeric
11	Continuation Code	Numeric
12	Accession No. -Accession No.	Numeric
48	Accession No. -Accession No.	Numeric

Each word is 10 digits plus a sign, each made up of four bits plus a parity bit. A block has 48 words and is the addressable unit. There are six blocks on each drum track (0-5), 20 tracks in each drum sector (00-19), 100 sectors per drum segment, and four (0-3) drum segments referred to as "drum-half" segments. (There are two drums, each with two drum-half segments.)

2. Abbreviated Citation File

This single tape file contains bibliographic information corresponding to the accession numbers that are filed on the RANDEX Drum. It is used following the output of the Retro-spective Search run to add bibliographic information to the list of retrieved accession numbers. The tape is sorted by accession number and for each entry has title, personal

author, and corporate author for about 10,000 documents.

There are 3 abbreviated citations per magnetic tape block.

(Each magnetic tape block has a capacity of 1,000 alphabetic characters.) 330 characters are required for an abbreviated citation.

3. Unit Record Citation File

This file consists of 10 reels of tape containing information in the format shown in Appendix G. The file will be used when maximum information is required.

4. Accessions Catalog File (File #3)

This file is a permanent multiple-reel collection of the accession numbers and descriptor codes for all of the documents in the system. It is used to produce an accessions catalog printout. The file is serial and sorted by accession number. It has the following format:

<u>Word Number</u>	<u>Information</u>
1	Accession Number (5 digits) - Zeros (5 digits)
2	Descriptor Code (5 digits) - Descriptor Code (5 digits)
3	Descriptor Code (5 digits) - Descriptor Code (5 digits)

(Continued to end of descriptor list.)

If there is an odd number of descriptor codes, the last LSD's (least significant digits) will contain all 9's. The record length is 25 words of which up to 24 may be used for the descriptor codes. Unused words will be set to zeros.

(2) Programs

1. Loading and Updating the Thesaurus

Figure 4 illustrates this program. Paper tape, containing the complete thesaurus in the format described in the Mechanization Section, is converted in the computer onto a work tape labeled Master File #1. During the transfer, carriage returns are deleted and the format is changed to groups of five words. The first word contains the descriptor code in the five MSD's (most significant digits) and zeros in the five LSD's. The descriptor itself will occupy the next four words beginning with the MSD. Multiple word descriptors will be recorded continuously, including spaces, to the maximum of 40 characters. Unused digits to the right of the last descriptor character will be filled with spaces to the end of the record. This file will then be sorted by descriptor code.

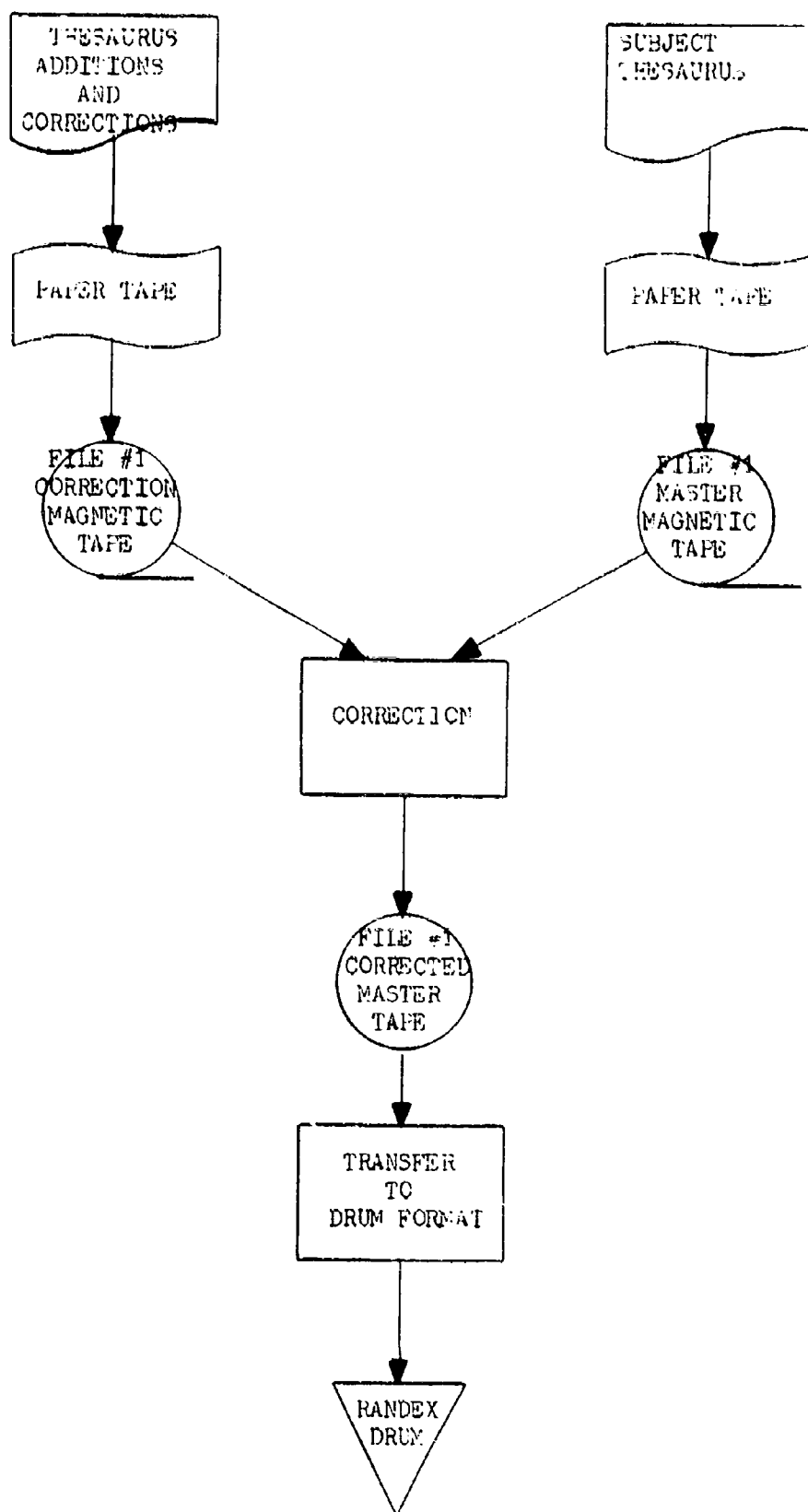


FIGURE 4

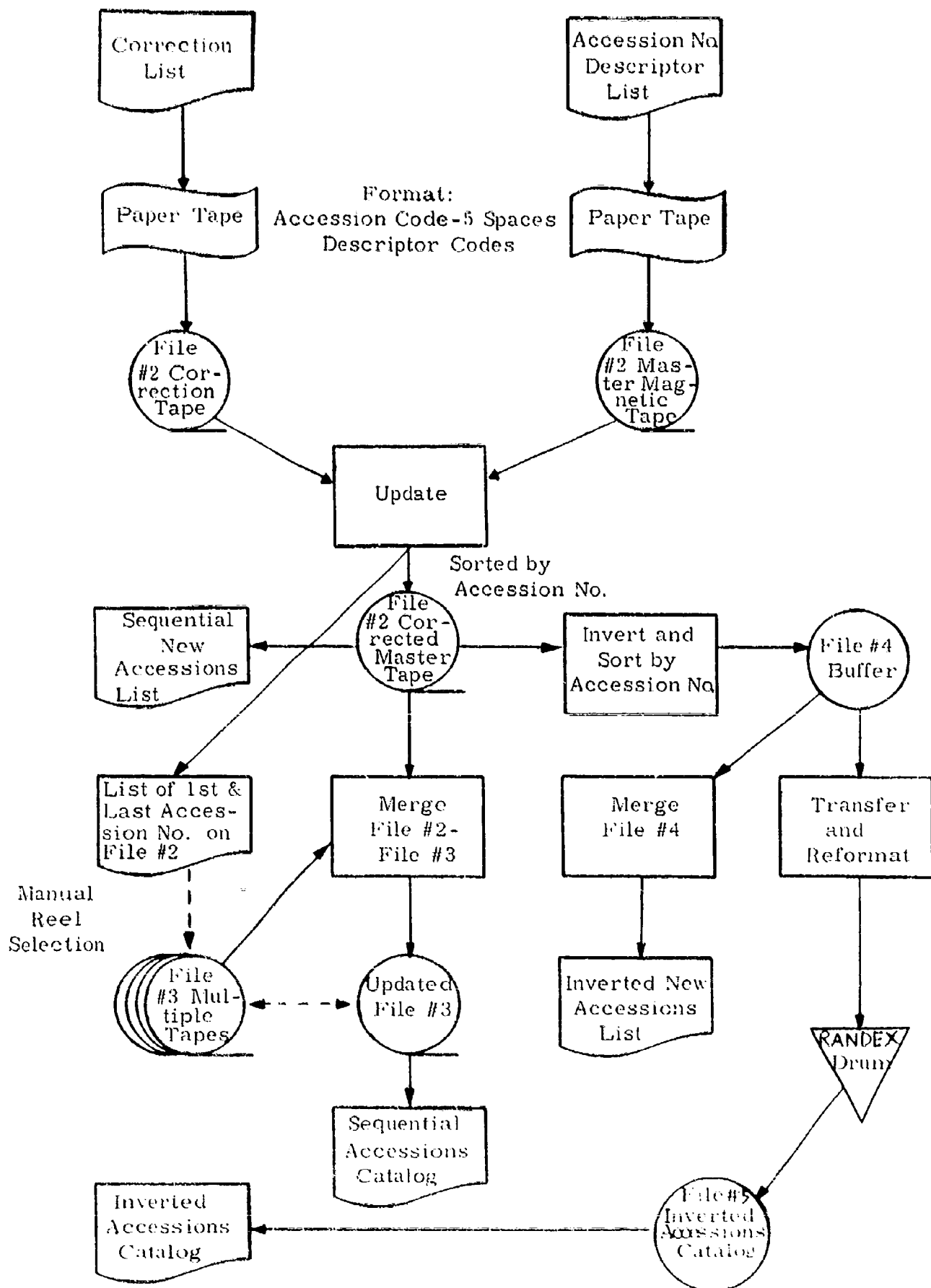
Loading and Updating the Thesaurus

Corrections or additions may be made to the file at this point by inputting the paper correction onto a work tape labeled Correction File #1. The reprocessing in the transfer is the same as in the case of the Master File #1. If an entire record is to be deleted, only the descriptor code appears on the correction tape. A descriptor code/descriptor combination on the correction tape, however, will replace an existing record on the master, or else will be inserted as an addition if the same code does not already exist on the master.

The results of the loading and correcting operation are transferred to a Corrected Master File #1 for buffering and subsequent loading on the RANDEX Drum. Using the File #1 format and the first drum segment, the two LSD's of the code are equated to the drum sector; the third digit, to the LSD of the track, and the two MSD's taken together, specify the block with the track MSD equal to zero or one depending upon whether the two code MSD's are equal to or less than five or are greater than five.

2. Loading and Updating the Document File

This operation is illustrated in Figure 5. The document file, supplied on paper tape, is transferred to a work tape labeled Master File #2.



carriage returns are deleted, a sort by accession number takes place, and the format is changed. The magnetic tape format has the accession number in the five MSD's with five zeros in the LSD's of the first word. The following words each contain two descriptor codes up to a maximum of 48 codes per record. If an odd number of descriptor codes is used, the last code will occupy the MSD's of the word and 9's will be placed in the LSD's. Unused words in a record will be recorded as machine code zero.

Correction may be made to this file in a fashion similar to the Master File #1. The prepared correction tape is transferred onto Correction File #2 magnetic tape and processed with the master tape. The master record will be replaced if the correction record is an accession number followed by descriptor codes. If only the accession number appears on the correction file, the master record of this accession number is deleted.

The corrected File #2 is then transferred to File #3 which is the Accessions Catalog File. Each descriptor code - accession numbers entry is transferred, one entry at a time,

to the main memory. The total number of accession numbers is computed and stored. The proper drum address is then located, and the total accession number count and list of new accession numbers are stored on the drum.

Each new File #2 is sorted with File #3 to produce an updated File #3. A printout of the first and last accession numbers on File #2, which occurred during the correction process, is used to manually select which of the File #3 tape reels is to be updated.

File #4 is generated by inverting File #2 so that the accession number and the descriptor code are combined into a single 10-digit number for each descriptor with the descriptor code appearing first in the MSD. A sort is then made by numerical sequence. File #4 is then printed out, forming a listing of new accessions arranged by the applicable descriptor code. The printed descriptor, which consists of a maximum of 40 characters, is followed by the accession numbers, each separated by three spaces, of all documents pertaining to the descriptor.

Every three months, the entire RANDEN record is transferred to work tape labeled File #5 and used to produce a complete inverted accessions catalog. Also, a serial listing of new accessions may be produced from File #2 containing the accession number followed by the descriptor codes. Each printed line of this listing can have 14 descriptor codes, each separated by three spaces.

3. Retrospective Searching

A request for search and retrieval of document references in a specified subject area is supplied on paper tape. The request will include the requester's search criteria and his name and organization. The search criteria are made up of from one to four types of coded specifications related to each other by an AND function. These are:

Type A1: AND specification

A2: OR specification

A3: NAND specification

A4: NOR specification

In the OR and NOR specifications, a number precedes the coded descriptors (e. g. . 2, D, E, F).

This number is the combination number which indicates the number of descriptors to be taken together in the OR specification, (e.g., 2, D, E, F - DE OR DF OR EF).

The paper tape is fed into the computer, and the program operates as illustrated in Figure 6 in the following manner:

- (1) Name and organization of the requester is placed on a magnetic tape designated R File 1.
- (2) The one to four types of specifications in the criteria are stored respectively in four individual sections of memory as follows:

Area A1 (AND) -- one descriptor code per word; last descriptor followed by a sentinel code. The total number of descriptors is computed and stored.

Area A2 (OR) -- one specification including combination number, per unit. Maximum of 10 units available, each containing six words representing a maximum of five descriptors plus combination number. Unused words within a unit are filled with zeros, and the first word of the first unused unit will contain a sentinel code. The total number of units is also computed and stored.

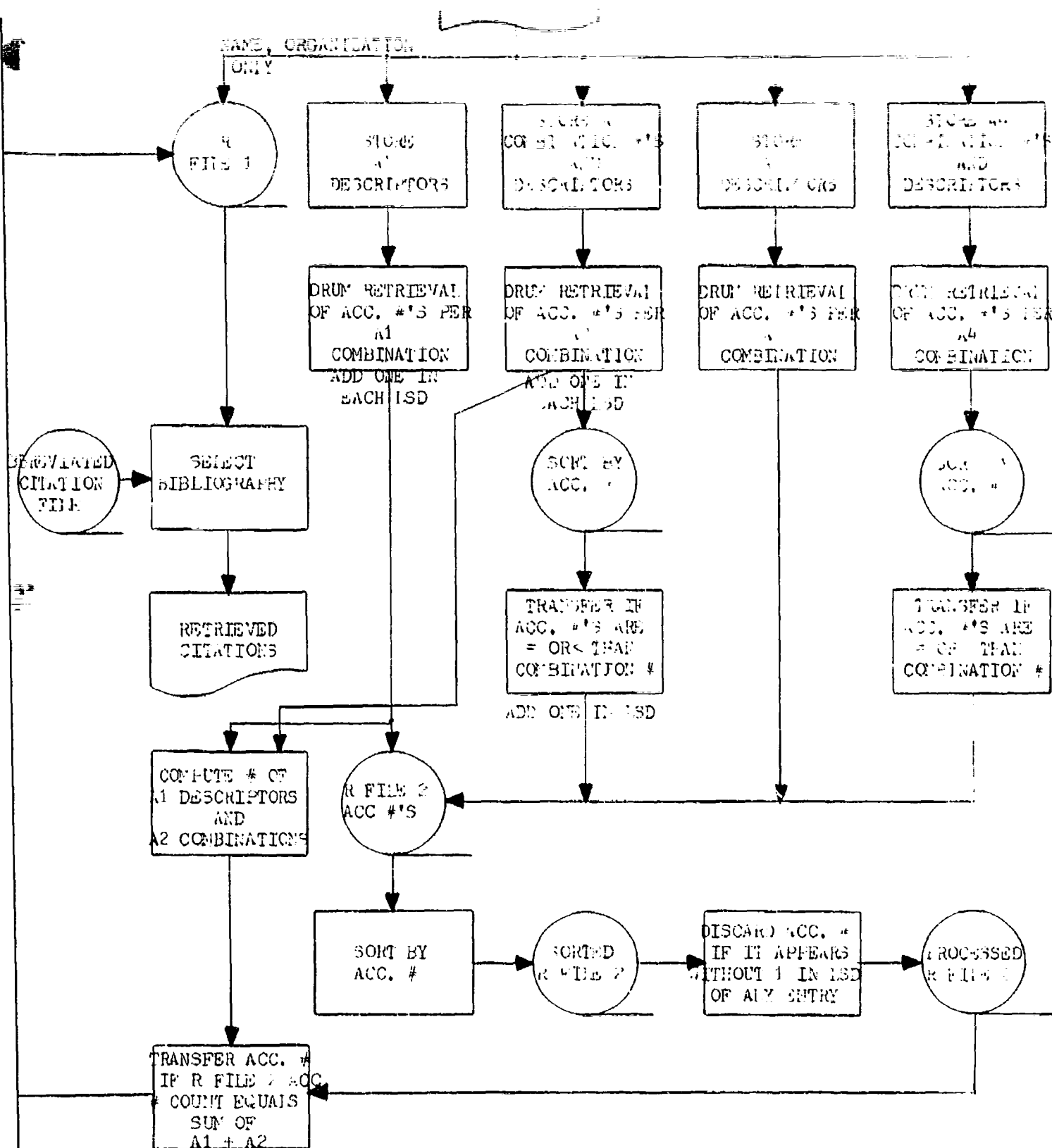


FIGURE 6
Search and Retrieval

Area A3 (NAND)--one descriptor per word.
last descriptor followed by a sentinel code.

Area A4 (NOR)--one specification and
combination number per unit stored in the
same fashion as Area A2.

(3) All accession numbers associated with the first
descriptor in A1 are transferred to a magnetic tape
designated R File 2--one accession number per MSD
of each tape word. This is repeated for all descriptors
in A1. At the time of the transfer, a one is placed
in the LSD of each word.

(4) The accession numbers associated with each of
the descriptors for the first unit of A2 are transferred
to an intermediate magnetic tape from the RANDEN
Drum where the numbers were stored during the
earlier thesaurus file maintenance operation. The
accession numbers are then sorted in numerical sequence.
The number of times an accession number is recorded
is compared to the combination number stored in the
first word of the unit. If the number of times is equal to
or greater than the combination number, this means
that one of the A2 OR arrangements is satisfied. In

this case, the accession number has a one inserted in its LSD and is transferred to R File 2. The remaining units in A2 are processed in the same manner.

(5) The accession numbers associated with the descriptors in A3 are transferred from the RANDEN Drum and processed in the same manner as for A1 in item (2) above. The numbers, however, will not have a one inserted in the LSD during transferral to R File 2.

(6) The accession numbers associated with the A4 units will be handled as in the case of the A2 units described in item (4) above. However, a one code will not be inserted during the transferral process.

(7) Final selection then occurs in the following manner:

1. R File 2 is sorted in numerical sequence.
2. If an accession number appears once without a one in its LSD, then the number is completely deleted. This satisfies the last two negative portions (A3 and A4) of the search criteria.

)

3. For the remaining accession numbers, the number of times a number is recorded will be compared to the total descriptor count, which is equal to the sum of A1 descriptors and A2 units. If the count and the number of times are equal, which means the first two parts of the criteria (A1 and A2) are satisfied, the accession number is transferred to R File 1, along with the name and organization of the requester. If the requester has requested additional searches, a sentinel code inserted in R File 1 separates the resulting accession numbers corresponding to the different search criteria.

(8) The final step is to run the selected accession numbers with the Abbreviated Citation File to produce the selected listing including bibliographic information

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IV. EQUIPMENT, COSTS, AND EVALUATIONS

1. EQUIPMENT

The Computer used for the three mechanized programs is Sperry

Rand's UNIVAC SS-II 90 consisting of the following:

- . Central Processor with 1,280 word core storage, and magnetic drum with 5,000 word storage.
- . Card Reader/Punch (150 cards per minute).
- . High-Speed Card Reader (600 cards per minute)
- . High-Speed Printer (600 lines per minute).
- . 6 Tape Drives
- . RANDEX Drum File with more than 24×10^6 -digit storage.

The RANDEX Drum word uses 10 digits plus a sign with each digit made up of four data bits and a parity bit. The RANDEX block, which is the only addressable unit of information on the drum, is composed of 48 words.

Computer software includes FORTRAN II compiler, S-4 assembly system, and several utility programs.

COSTS

Information Division Staff

SDI Program development - 4 to 5 man-months

Serials Processing System development - 3 man-months

Retrospective Search Program development - 4 man-months

Descriptive cataloging and abstracting - 8 man-months

Thesaurus development - 16 man-months

Contractor

SDI and Serials Processing Systems - \$18,500

Thesaurus construction, subject
cataloging, etc. - \$100,000

Descriptive cataloging and abstract
file creation - \$18,600

Computer Staff - Development

Thesaurus file creation - 3 man-months

Retrospective file creation - 30 man-months

Run Costs

SDI System - \$1,200 month

Serials Processing System - \$65 month

Retrospective Search System - \$250 month

3. EVALUATIONS

In testing the SDI Program, it was found that the MAY system of selection criteria was not as discriminating as the WEIGHT system. Also, as a result of participant disinterest in filing his copy of the notification card (one card per selected citation), he is now sent the machine-produced printed sheet of all citations selected for him.

The SDI System is evolving toward a project orientation rather than individual orientation in order to reduce redundant computer runs resulting from nearly identical profiles. This evolution will result in the identification of several groups of participants, all of whom will receive the same selected citation notices.

Management interests tend to be too broad for useful SDI participation. It is found to be more practical to provide the information to subordinates who in turn have the responsibility of keeping their superiors informed.

The current level of participant selections from SDI citation notification is 50 percent. The Technical Information Division feels that a range of 40 to 80 percent limits extraneous material and provides the participant with the opportunity to expand his interests. Also a list of less than 100 citation notifications per month is considered an indication of a good profile.

The MEDLARS tapes differentiate between elementary versus advanced, and old versus new information, but they do not indicate whether the citations are general or specific. The later indication would be helpful to the participants in making their choices.

The SDI System is a useful tool in dissemination of current awareness type information. However, there is no indication that it is any substitute for browsing or retrospective searching. The Information Division feels that browsing encourages the development of ideas. The SDI System can relieve the participant of the time-consuming task of looking up new material, therefore permitting him more time for browsing.

The Technical Information Division believes that a good SDI System takes a long time to develop and refine and requires a scientist-to-scientist dialogue for its development. Thus the system developer must be nearly equivalent to a colleague of the participant, and the participant must be willing to give the necessary time to the development of his profile.

The use of the word "interest" in the SDI system is a poor choice. Good profiles actually tend to produce only needed information rather than interesting information.

Developing an SDI System participant profile often produces two by-products; a better understanding of the information needs of the job and a better definition of the area of research. It was determined that a participating researcher receiving a great deal of information tended to narrow the scope of his research.

A developed SDI System can also be used to determine individuals with mutual interests.

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Biological Laboratories. AD 617086, AD 621066

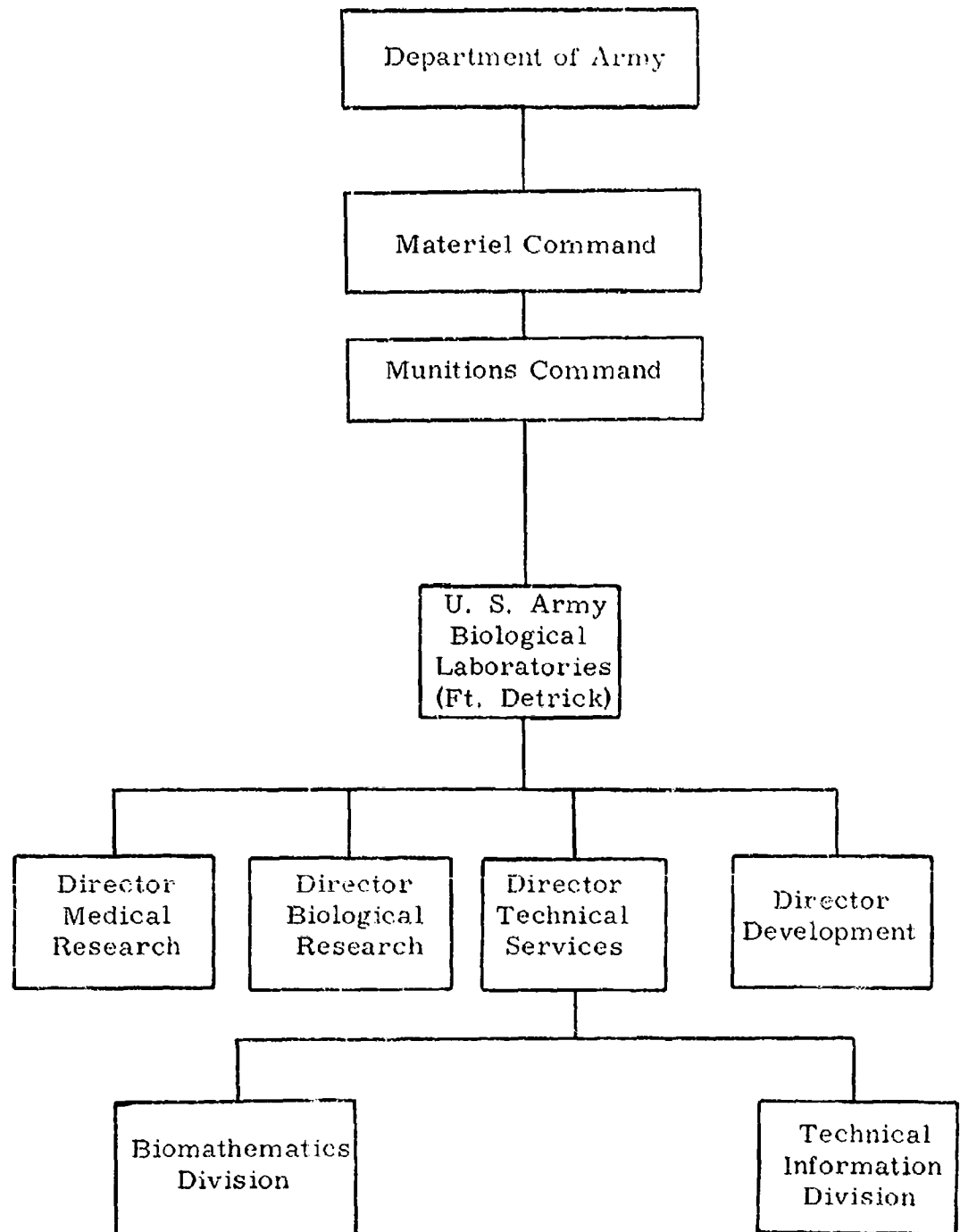
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ORGANIZATION CHART



APPENDIX B

SDI INPUT CARDS AND OUTPUTS

PROFILE ACTION CARDS - FORMAT

<u>Card Column</u>	<u>Description</u>
1-9	Participant number
10	Card type code: 1 - Name Card 2 - Address Card 3 - Language Card 4 - Interest Card
11-13 (Card type 4 only)	Interest number
14-16 (Card type 4 only)	Tag number
	If the type 4 card is used to delete an interest, the tag is left blank
17	Action type code: A - Add C - Change D - Delete
18	Blank
19-20 (Card type 4 only)	Weight number. If a tag is a MUST or a NOT, 19 is left blank and 20 contains M or N. These columns are used only for an add or change of a tag with card type 4.
21-55 (Card type 1 only)	An added or changed name
21-55 (Card type 2 only)	An added or changed address line 1
56-90 (Card type 2 only)	An added or changed address line 2
21-30 (Card type 3 only)	Language
21-68 (Card type 4 only)	An added or changed interest tag

PROFILE ACTION CARDS - DESCRIPTION

Name Card A name card may be used to add or delete a participant from the Interest Profile File, or to change the name.

When a name is to be added, all card types entered in the run must be coded as add cards. When a record is to be deleted from the file, only the name card coded for delete need be used. Only one name card may be entered for a participant during any run.

Address Card An address card may be used to add or change a participant's address. Provision is made for two address lines if only one is used. Columns 56-90 are left blank. Otherwise both lines will be entered. Only one address card may be entered during any run.

Language Card A language card may be used to add or delete a language. Languages are constrained to a total of ten languages of less than eight characters each.

Interest Card An interest tag may be added to the file by entering an add card with the interest number and with or without a tag number. When the tag number is left blank, the tag to be added will be placed in front of all tags for this interest that are already on the profile. As each tag is placed on the profile, a tag number beginning with 1 and increasing by 1 for each tag will be assigned by the program. Therefore, whenever a tag is added or deleted, the tag number of every other tag under that interest number could be changed.

When the tag number is entered for an add card and the same tag number is already on the file, the tag will be placed immediately following the tag that is on the file. Otherwise, it will be placed on the file in sequence by the tag number assigned.

Each interest tag other than MUST or NOT tags must have a two-digit weight number assigned to it, if the tag is being added or changed. Also, if a tag is to be changed, the tag number and the proper weight or MUST/NOT code must be included.

If a tag is to be removed, both the interest number and tag number are required. If all tags under an interest are to be removed, a single delete card may be entered for that interest number with the tag number left blank.

When an entire interest is deleted from the file, no other actions for that interest should be entered in the same run.

Only one action card should be entered for a specific tag during the run.

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MODEL

ANOTHER PAPERWORK SIMPLIFICATION TOOL
BY THE STANDARD REGISTER CO.

UNIVERSAL T

PARTICIPANT NUMBER XXX-XX-XXX

NAME

TITLE

ADDRESS/LINE 1

ADDRESS/LINE 2

LANGUAGES

INTEREST NUMBER - XXX

TAG NR WEIGHT TAG

XXX XX X

Interest Profile Status Report

Copy drawn for RIA Type 457 may include alignment symbols (V) in one or more of these locations, shown.

[illegible]

B-4

SDI Notification Form

TO - RALPH E. LINCOLN
PROCESS DEVELOP.

216-44-4569 16 DECEMBER 1965

ON THE INTERRELATION BETWEEN NUCLEIC
ACID METABOLISM AND TOXIN BIOSYNTHESIS
IN *STAPHYLOCOCCUS ALBUS* ISMIRNOVA EV
BLAGOVESHCHENSKAIA EV KUCHINSKAIA
LELEJEVA ZI V OF M E. K HIN
10: 274 - 9: MAY -JUN 64
RUS
STAPHYLOCOCCUS

FROM - RALPH E. LINCOLN
216-44-4569 16 DECEMBER 1965
(CIRCLE APPROPRIATE RESPONSE NUMBER)
1. OF INTEREST; DOCUMENT REQUESTED
2. OF INTEREST; DOCUMENT NOT WANTED
3. OF INTEREST; HAVE BEEN REVIEWED
4. OF NO INTEREST

ON THE INTERRELATION BETWEEN NUCLEIC
ACID METABOLISM AND TOXIN BIOSYNTHESIS
IN *STAPHYLOCOCCUS ALBUS* ISMIRNOVA EV
BLAGOVESHCHENSKAIA EV KUCHINSKAIA
LELEJEVA ZI V OF M E. K HIN
10: 274 - 9: MAY -JUN 64
RUS

TECHNICAL LIBRARY
U. S. ARMY BIOLOGICAL LABORATORY
FORT DETRICK
FREDERICK, MARYLAND

SDI STATISTICS

PARTICIPANT NUMBER	PARTICIPANT NAME	NOTIFICATIONS THIS PERIOD	RESPONSES LAST PERIOD	NUMBER OF
XXX-XX-XXXX	X	XXXXX	XXXXX	XXXX
XXX-XX-XXXX	X			
TOTALS -		XXXXX	XXXXX	XXXX

THE PARTICIPANT NUMBER WILL BE PRINTED WITH AN *
WHENEVER A CARD HAS AN INVALID RESPONSE CODE
OR THE PARTICIPANT IS NOT CONTAINED IN THE
INTEREST PROFILE.

SDI Statistics

6 7 8 9 10 11 12 13 14

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100		1 2 3 4		
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	XXXX	XXXX XXXX XXXX	XXXXXX	XXXXXX

APPENDIX C

SERIALS PROCESSING SYSTEM
INPUT AND OUTPUTS

TRANSACTION CARDSField Definition for Generating Data

<u>Field</u>	<u>Card</u>	<u>Column</u>	<u>Length</u>
Title Code	1-6	1-5	5
Title	1	6-40, 46-65	55
# of Copies	1	66-67	2
Vol. #	1	72-75	4
Iss. #	1	80-83	4
Vendor	2	6-40, 46-54	44
Add. #2	2	55-84	30
Add. #3	3	6-35	30
Cost	3	36-40	5
Add. #4	3	46-75	30
Location	3	76-80	5
Renew. Date	3	81-84	4
Publisher	4	6-25	20
City of Pub.	4	26-40	15
Freq.	4	46-49	4
# in Vol.	4	50-51	2
# in Bnd. Vol.	4	52-53	2
Pur. Order #	4	54-73	20
Sub. Code	4	74-83	10
Lang. Code	4	84	1
Cross Ref.	5	6-40, 46-80	70
Issue Rec'd.	5	81-82	2
Foreign Issue	5	83	1
Sets Bnd.	5	84	1
Iss. Holdings	6	6-40, 46-80	70
Card Code	1-6	85	1

TRANSACTION CARDSField Description for Generating Data

<u>Card</u>	<u>Columns</u>	<u>Description</u>
1-6	1-5	Unique title code with alphabetic significance.
1	6-40 46-65	Title of serial written in full, if possible.
1	66-67	Number of copies received of a single issue
1	72-75	Volume number of last issue received.
1	80-83	Issue number of last issue received.
2	6-40 46-54	Vendor or supplier of serial subscription.
2	55-84	Second row of vendor's address.
3	6-35	Third row of vendor's address
3	36-40	Cost of subscription in dollars.
3	46-75	Fourth row of vendor's address.
3	76-80	Location of serials final placement.
3	81-84	Date of last issue on current subscription, i. e., 0665.
4	6-25	Publisher
4	26-40	City of publication.
4	46-49	Frequency code as determined by frequency chart
4	50-51	Number of users in each regular volume.
4	52-53	Number of issues in each bound volume.
4	54-73	Purchase order number.
4	74-83	Subject code.
4	84	Single letter to determine language of serial
5	6-40 46-80	Cross-reference information.
5	81-82	Number of issues received in current volume.
5	84	Number of sets bound for each volume on binding date.
6	6-40 46-80	Free form record of total issue holdings

C-2

UNITED STATES ARMY MEDICAL LABORATORIES

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ACTA PSYCHIATRICA POLONICA (ENGLISH TRANSLATION)

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TRANSLATED FROM POLISH

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ACTA MEDICA SCANDINAVICA

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ACTA MEDICA SCANDINAVICA SUPPLEMENTS

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P000600(A)ITEM2

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TL

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1/66

AIR POLLUTION CONTROL ASSOCIATION

APCA ABSTRACTS
TL

1/67

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TL

P001536(A)ITEM 1

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C-5

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AMERICAN CITIZENSHIP

TL

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ARMY

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C-6

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VOLUME 0038

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ALL THINGS WORLD

VOLUME 0074

ISSUE 0001

VOLUME 0074

ISSUE 0002

VOLUME 0074

ISSUE 0003

VOLUME 0074

ISSUE 0004

VOLUME 0074

ISSUE 0004

VOLUME 0074

ISSUE 0005

VOLUME 0074

ISSUE 0007

MILITARY

VOLUME 0024

ISSUE 0004

VOLUME 0024

ISSUE 0005

BIOLOGICAL

VOLUME 0076

ISSUE 0006

VOLUME 0076

ISSUE 0006

VOLUME 0077

ISSUE 0007

VOLUME 0077

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VOLUME 0077

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VOLUME 0077

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ISSUE 0009

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D-1a
Thesaurus - Part 1 - Total Descriptors

0 1 2 3 4 5 6 7 8 9

Epidemiology 02417

 Disease distribution 02118 09583

 Causes (of) 01390

 Hypotheses (of) 03337

 Formulation (of) 02770

 Method (for) 09575

 Agreement 00285

 Analogy 00434

 Concomitant variation 01688

 Difference 02071

 Rejection (of) 05845

 Selection (of) 09510

 Testing (of) 02704

 Method (for) 09575

 Analytic 00435

 Case history 01369 09560

 Cohort 09515

 Experimental 02514

 Controlled 01728

 Natural 04608

 Uncontrolled 07199

 Data (on) 01920

 International measures 03586 03587

 Reporting procedures 05862 09575

 Sources (of) 03879

 Descriptive variables 01994

 Environment 02393

 Chemical 00941

 Deficiency 01944

 Pollution 05462

 Climate 01588

 Dry 02182

 Moderate 04184

 Moist 04187

 Polar 05453

 Tropic 07116

 Cultural 01844

 Patterns 05244

 Prohibitions 05548

 Ecological 02265

 Community 01673

 Ecological interactions 02284

 Commensalism 01663

 Competition 01677

 Mutualism 04442

 Neutralism 04656

 Parasitism 05213

 Host 03249

 Parasite 05113

0 1 2 3 4 5 6 7 8 9

Thesaurus - Part 2 - Condensed Descriptors

0 1 2 3 4 5 6 7 8 9

Epidemiology 02417

Disease distribution 02118 09583

Causes (of) 01390

Hypotheses (of) 03337

Testing (of) 02704

Data (on) 01920

International measures 03596 03587

Reporting procedures 05862 09575

Sources (of) 03879

Descriptive variables 01994

Environment 02393

Chemical 00941

Climate 01588

Cultural 01844

Ecological 02285

Meteorological 04303

See Biological Operations, Aerosols, Characteristics,

Factors affecting, Meteorological

Person 05312

Age 00280

Race 05780

Sex 06389

Place 05416

Continent 01722

Country 01782

Region 05843

Reservoir 05867

Terrain 06892

Forest 02754

Grass 02974

Hills 03206

Mountains 04227

Plains 05419

Valley 07297

Time 09500

Cycle 09570

Interval 03592

Season 06329

Year 07543

Disease frequency 02118 02119

Change 09541

Secular 06338

Cohort analysis 09516 00435

Cycle 09570

Death 01925

Endemic 02350

0 1 2 3 4 5 6 7 8 9

England 05894 Epidemiology 05
 Engorgement 02367 Pathology 05
 Enlargement 02368 Pathology 05 Physiology 03,04
 Enphytotic 02369 Epidemiology 03
 Enriched 02370 Laboratory Operations 06
 Enrichments 02370 Laboratory Operations 07
 Enteral 02373 Materia Medica 04
 Enteric caeca 02374 Anatomy 05
 Enteritis, chronic 04101 01551 Pathology 04
 Enterobacteriaceae 02377 Taxonomy 03
 Enterococci confirmatory agar 02379 Laboratory Operations 06
 Enterococci confirmatory broth 02378 Laboratory Operations 06
 Enterococci presumptive broth 02380 Laboratory Operations 06
 Enterotoxic 02382 Biological Operations 07
 Enterovirus 02384 Taxonomy 04
 Entire 02385 Laboratory Operations 06
 Entodiniomorpha 02386 Taxonomy 05
 Entomological 02387 Biological Operations 03
 Entomology 02387 Entomology 00
 Entomophthorales 02388 Taxonomy 03
 Entonyssidae 02389 Taxonomy 06
 Entropy 02390 Physics and Biophysics 02
 Entry 07787 Management 05
 Entry portals 02391 Biological Operations 03 Pathology 05
 Erythema oryzae 06089 Pathology 07
 Envelope 02392 Anatomy 02
 Environment 02393 Biological Operations 04 Engineering Sciences 03
 Epidemiology 03
 Enzootic 02394 Epidemiology 03
 Enzymatic digests 02364 Laboratory Operations 07
 Enzyme 02395 Biological Operations 05,07 Chemistry and Biochemistry 04
 Laboratory Operations 07 Pathology 05 Physiology 02,07
 Enzyme action 02395 0023 Physiology 03
 Enzyme inhibiting 02395 02397 Materia Medica 03

D-1c

Thesaurus - Part 3 - Alphabetical Descriptors

Enzyme studies 02396 09550 Pathology 05
Eosin 02398 Laboratory Operations 06,08
Eosin azur 02399 Laboratory Operations 06
Eosin ethyl 02400 Laboratory Operations 06
Eosin methyl 02401 Laboratory Operations 06
Eosin methylene blue agar 02402 Laboratory Operations 06
Eosin scarlet 02403 Laboratory Operations 06
Eosin Y 02404 Laboratory Operations 04
Eosinophils 02405 Anatomy 09
Eperythrozoon 02406 Taxonomy 04
l-Ephenamine penicillin G 02407 Materia Medica 05
Epibasidium 02408 Anatomy 05
Epicotyl 02409 Anatomy 03
Epicriidae 02410 Taxonomy 06
Epicrius 02411 Taxonomy 07
Epicroseius 02412 Taxonomy 07
Epidemic 02413 Biological Operations 04 Epidemiology 03
Epidemic jaundice Use Infectious hepatitis 03421
Epidemic typhus 02415 Pathology 06
 Used for Classical typhus, Typhus exanthematicus, Urban typhus
 Also see Rickettsia prowazekii 05752 (causative agent)
Epidemiology 02417 Epidemiology 00
Epidermis 02418 Anatomy 02,03,04,05
Epididymis 02419 Anatomy 05
Epinephrine 02421 Physiology 08
Epiphytotic 02422 Epidemiology 03
Episome 02423 Genetics 03
Epithelial 02424 Anatomy 04 Laboratory Operations 09 Pathology 05
Epithelium 02424 Immunity 04
Epon 08230 Chemistry and Biochemistry 05
Epoxides 02425 Genetics 05
Epoxy 02426 Chemistry and Biochemistry 04
Equations 02427 Automatic Data Processing 04 Chemistry and Biochemistry 04
 Mathematics and Statistics 01,02

Sequential Accession List

(Computer Output)

00003	00000	00559	00334	00005	00543	00770	00710	00791	00465	01925
00004	00000	001505	004538	004001	001508	00320	00779	01093		
00005	00000	000615	002701	00152	00320	00630	00139	02396		
00006	00000	001618	003006	000543	001045	00405	000578	03276	02926	05320 06660 06782
00007	00000	000141	005231	000279	004381	00950	00431	05253	05432	
00008	00000	000141	002102	002102	002431	00955	00432	06456	06678	09538
00009	00000	00409	005910	005423	00418	00790	00408	03555	02500	
00010	00000	003006	000710	000743	00324	00701	01320			
00011	00000	001320	001078	002601	001045	002704	00738	01093	02204	02926 06660 09937
00012	00000	005073	004702	005301	003006	001045	00958	05324	00377	06660 07379
00013	00000	002502	001003	007101	004189	002704	01971	02427	02401	01666
00014	00000	00461	001402	00541	00650	00104	01604	05264	09578	
00015	00000	000289	005916	004593	00408	00760	02118	03418		
00016	00000	000177	005423	004470	005426	009513	00303	01055	001850	
00017	00000	001534	00536	00472	00408	003006	00307	02298	00345	00678 09571 02164 09552
00018	00000	001686	00625	00237	00508	00428	00400			
00019	00000	000815	000209	004005	001545	00435	00715	002401	01053	02431 03256
00020	00000	005409	002006	000600	002396	00324	00195	05916	00970	05423
00021	00000	000077	004005	003006	000660	000738	003404	02079	01045	04534 02704
00022	00000	005073	003006	00600	00379	00202	03276	09578		
00023	00000	00942	00444	001043	004303	00421	00209	03377	06660	03418 02008

Sequential Accession List - 2nd Time & 8

Sequential Accession List - 2nd Time & 8

D-2B

Sequential Accession List

(as announced and delivered to Staff)

40145

Chicago U., Ill.

Definition of the requirements for multiplication of microorganisms of the psittacosis group outside of the host cell; annual tech. rept., 1 Sep 62 - 31 Aug 63. 5 l.

Unclassified

Moulder, J. W.

Contr DA-18-064-AMC-4-A.

*MENINGOPNEUMONITIS VIRUS. *METABOLISM. NUCLEIC ACIDS. ENZYMES. GROWTH. TISSUE CULTURES: L CELLS. PURIFICATION. AMINO ACIDS. PROTEINS/HYDROLYSIS.

c.1

Inverted Accession List

[illegible]

Example of Information Request Form

MACHINE SEARCH REQUEST

Draw a line thru all unused spaces; always include 1-1

Req No.	Name of requestor, address of requestor, purpose of search (space as desired and																								
8																									

insert 1 cr if necessary) up to 130 characters are permitted.																								

(2 cr)

"must" descriptors up to 100 characters are permitted																								

1st "or" group										2nd "or" group														

3rd "or" group										4th "or" group														

"not" descriptors up to 100 characters are permitted																								

1st negative "or" group										2nd negative "or" group														

3rd negative "or" group										4th negative "or" group														

(2 cr)

(stop code after last request)
NOTE: Up to 10 "or" groups are allowed.

SMUFD FORM 527 Test Oct 65

D-5A

Search Results
(Present Structure)

REQUEST #1 00048 2 ACC #1 30060 DATE 1 MAR 54

TITLE : RECOMMENDED PROCEDURES FOR THE IDENTIFICATION OF PATHOGENIC MICROORGANISMS

CORPORATE AUTHOR : ARMY BIOLABS-PHYS DLF DIV

PERSONAL AUTHORS : LEISE, J. M. FRIEDLANDER, H. JAEGER, F.
PHILLIPS, R.

REQUEST #1 00048 2 ACC #1 30410 DATE 1 000 10

TITLE : QUARTERLY PROGRESS REPORT OF RESEARCH

CORPORATE AUTHOR : U.S. PUBLIC HEALTH SERVICE, SANITARY ENG. CENTER

PERSONAL AUTHORS : BUNCH, R. L.

REQUEST #1 00048 2 ACC #1 31196 DATE 1 000 10

TITLE : QUARTERLY PROGRESS REPORT OF RESEARCH

CORPORATE AUTHOR : U.S. PUBLIC HEALTH SERVICE, SANITARY ENG. CENTER

PERSONAL AUTHORS : BUNCH, R. L.

REQUEST #1 00048 2 ACC #1 36161 DATE 1 MAR 63

TITLE : AEROBIOLOGY DIVISION SEMIANNUAL TECHNICAL SUMMARY

CORPORATE AUTHOR : ARMY BIOLABS-AFRC DIV

PERSONAL AUTHORS : PERSICHLIT, K. FENLDT, R. DROZD, E. J.
PRICKITT, M. F. LUTHE, J. A. ET AL.

REQUEST #1 00048 2 ACC #1 40095 DATE 1 DEC 63

TITLE : ELECTRICAL CONDUCTANCE OF AQUEOUS SUSPENSIONS OF MICROORGANISMS AND RATE OF LEAKAGE

CORPORATE AUTHOR : ARMY BIOLABS-PHYS SLIER DIV

PERSONAL AUTHORS : DERRY, JR., J. S.

D-5B

Search Results
(Proposed Structure)

UNIT RECORD SAMPLE

UNCLASSIFIED

COTE: 02971

SOURCE : CMLC-VIGO PLANT TERRE HAUTE, INDIANA

TITLE : OBSERVATIONS ON THE PERMANENT EFFECTS OF AERIAL PLANT GROWTH
INHIBITORY SPRAYS UPON NATURAL VEGETATION (U)

DATE : AUG 46 DESCRIPTIVE NOTE : SPEC REPT 78

PAGES : 19 COPY #: 8 OF 25

REPORT CLASSIFICATION : UNCLASSIFIED

RELEASE LIMITATIONS: PUB REL

AUTHORS: NEWMAN A.S. ENNIS, JR. W.B.

CONTRACT #: MIA12222

PROJECT #: OL2345

TASK & W.O.#: 12345 54321

OTHER SERIES #: AD 22271

SUPPLEMENTARY NOTE : SEE ABSTRACT (U)

DESCRIPTORS (U) *THIOPEDIA ROSEA

THIOBACILLUS NOVELLUS

TABANIDAE

TABLES

TACAIUMA

*TANK, WING

ABSTRACT: (U) FOLLOWING THE AERIAL DISTRIBUTION OF PLANT GROWTH

INHIBITING CHEMICALS: QUESTIONS ARE FREQUENTLY ASKED

REGARDING THE ENDURING EFFECTS OF SUCH SPRAYS UPON ANNUAL AND

PERENNIAL VEGETATION. THE PROBLEM IS WHETHER SUFFICIENT AGENT

PERSISTS IN THE SOIL TO AFFECT THE GROWTH OF SUCCEEDING CROPS,

WHETHER THERE IS ANY REDUCTION IN THE NUMBER OF WEEDY PLANTS,

AND THE EFFECT UPON TREES AND SHRUBS.

LECTION

Interest Profile Tape File

Record
Word
Number

10 Digits			
01	Participant Number		
2	Name		
3	Name (continued)		
4	Name (continued)		
5	Name (cont.) Blank		
6	Address (Line 1)		
7	Address (Line 1)		
8	Address (Line 1)		
9	Address Address (Line 1) (Line 2)		
10	Address (Line 2)		
11	Address (Line 2)		
12	Address (Line 2)		
13	Language 1		
14	Language 2		
15	Language 3		
16	Language 4		
17	Language 5		
18	Language 6		
19	Language 7		
20	Language 8		
21	Language 9		
22	Language 10		
23	Number of Notifications This Period		
24	Total Notifications		
25	Number of Response 1		
26	Number of Response 2		
27	Number of Response 3		
28	Number of Response 4		
29	Blank		
30	Blank		
31	Interest Number	Tag Number	0 0 Weight
32	Tag Word		
33	Tag Word		
34	Tag Word		
35	Tag Word		
36	Tag Word		

Variable Record Length
If a second record is
necessary, the first
interest on that record
will start at 003.

Weight will be a
Blank/N for NOT
and Blank/M for
MUST

length.

8

rd

E-2

Interest Tags File

10 Records per
Block

Record Word Number	10 Digits				
1	Tag Word				
2	Tag Word				
3	Tag Word				
4	Tag Word				
5	Tag Word				Blank
6	Blank				
7	Participant Number				
8	Interest Number	Tag Number	X	Y	Weight
9	Blank				
10	Blank				

X = - For MUST
X =) For NOT
Y = Blank For
Weight System
(if May System
were used--
would be —)

E-3

Medlars Dictionary Tape File

	Record Word Number	
10 Records Per Block	1	English Main Heading
	2	"
	3	"
	4	"
	5	"
	6	Blank
	7	Main Heading Code
	8	Alternate Main Heading Code
	9	Blank Alt.
	10	Blank Ind.

E-4

Retrieved Citation File

	Record Word Number		
Two 500-Character Records Per 1,000- Character Block	1	Citation Number	
	2	Language Code	
	3	Number of Main Heading Codes	
	4	Main Heading Code	Variable
	5	Main Heading Code	
	6	Title, Author, JTA,	
	7	Volume, Pagination,	
	8	Publication Date,	
	9	Continuation	
	10	"	
	11	"	

Coded Interest Tags File

	10 Digits				
1	Participant Number				
2	Interest Number	Tag Number	X	Y	Weight
3	Main Heading Code				
4	Tag Word				
5	Tag Word				
6	Tag Word				
7	Tag Word				
8	Tag Word				Blank
9	Blank				
10	Blank				

E-6

Selected Citations File

Two 500-Character
Records Per Participant

Record 1 is for the
selected citation. There
may be more than one
record per participant
if the citation is long.

Record 2 contains the
interest and tag number
of each tag that caused
selection.

FFFFFFFF 10 follows
last entry of Record 2 for
one participant.

Participant Number	1
Lang.	
Code	
Number of Main Head. Codes	
Main Heading Code	
Main Heading Code	
Title, Author,	
JTA, Volume,	
Pagination, Publication	
Date	
Continuation	
Continuation	
Participant Number	2
Interest Tag X	
Continuation	
"	
"	

X = - For N
X =) For N

APPENDIX F

**SERIALS PROCESSING SYSTEM
FILE STRUCTURE**

F-1					
1	2	3	5	6	
Systems Tape	Scratch to Trans				Edit Transactions
Systems Tape				Scratch to New Routing List	Create Routing List
Systems Tape	Sorted Trans	Old Master File To Scratch	Old Ac- cessions to New Master file	Scratch to New Access- ions	Serial Library Control System
Systems Tape			Master File		Cumulative Holdings Supplies List Expiration Date List
Systems Tape	Scratch to Sorted Output	Scratch	Scratch	Scratch	Transferred to Spot

Master Instruction Tape Format

<u>BLOCK</u>	<u>I.D.</u>	<u>FUNCTION</u>
0002	67 0000 HHHH	Load Block
0004	77 0001 B055	Internal Control (MASCOT)
0013	77 0002 B101	Internal Functions (MASCOT)
0041	77 0050 B001	MASCOT 50-Function
0072	77 0051 B001	MASCOT 51-Function
0079	77 0052 B001	MASCOT 52-Function
0088	77 0054 B001	MASCOT 54-Function
0095	67 0100 HHHH	Unused
0097	67 0110 HHHH	Unused
0099	67 0125 4999	Unused
0101	67 0150 4999	Unused
0103	77 0200 B000	Sort for Transactions
0112	77 0201 B000	Sort for Transactions
0120	77 0202 B001	Sort for Transactions
0129	77 0203 B201	Sort for Transactions
0139	77 0204 B001	Sort for Transactions
0165	77 0206 B200	Sort for Transactions
0181	77 0207 B000	Sort for Transactions
0201	77 0208 B000	Sort for Transactions
0221	77 0209 B000	Sort for Transactions
0580	67 0400 3500	S-4
0643	67 0500 4999	Cumulative Accessions
0671	67 0520 4999	Create Routing List
0695	67 0540 4999	Serial Supplier List
0722	67 0560 4999	Serial Expiration List
0749	67 0580 4999	Edit Transactions
0772	67 0600 4999	Serial Library Control

F-2b

COMPLETE DESCRIPTION OF MASTER FILE RECORD

<u>Word</u>	<u>Length</u> <u>Field</u>	<u>Field Name</u>	<u>Field Description</u>
1	5	Title Code	Alpha-numeric, left justified
2-7	55	Title	Alpha-numeric, left justified
8	4	Volume Number	Numeric, right justified
9	4	Issue Number	Numeric, right justified
10-14	45	Contractor	Alpha-numeric, left justified
15-17	30	Second Row Contractor Address	Alpha-numeric, left justified
18-20	30	Third Row Contractor Address	Alpha-numeric, left justified
21-23	30	Fourth Row Contractor Address	Alpha-numeric, left justified
24	5	Cost	Numeric, right justified
25	5	Location	Alpha-numeric, right justified
26	4	Renewal Date	Numeric, right justified
27-28	20	Publisher	Alpha-numeric, left justified
29-30	15	City of Publication	Alpha-numeric, left justified
31	4	Frequency Code	Numeric, right justified
32-33	3	Purchase Order No.	Alpha-numeric, left justified
34	3	Subject Code	Alpha-numeric, left justified
35-41	70	Cross Reference	Alpha-numeric, left justified
42-48	70	Issue Holdings	Alpha-numeric, left justified
49	2	Numer of Copies Recorded	Numeric
49	1	First Issue Indicator	Alpha-Numeric

F-2c

	<u>Length of Field</u>	<u>Field Name</u>	<u>Field Description</u>
	2	Number Issues in a Volume	Numeric
	2	Number Issue in a Bound Volume	Numeric
	1	Language Code	Alpha-Numeric
	1	Foreign Code	Alpha-Numeric
	1	Number of sets of Bond	Numeric
00	2	Number of Issues Received	Numeric
00	2	GRCT	Numeric
00	2	NRCT	Numeric
00	1	Index Indicator	Numeric

F-2d

Description of the Transaction Tape Format

<u>Word</u>	<u>Length of Field</u>	<u>Field Name</u>
1	5	Title Code
2	1	Card Code
3-6	40	Transaction Card Column 6-40
7-10	40	Transaction Card Column 46-85

APPENDIX G

RETROSPECTIVE SEARCH FILE
UNIT RECORD CITATION FILE FORMAT

APPENDIX G

UNIT RECORD CITATION FILE FORMAT

Block 1

Item	Length
1. Accession Number	10
2. Classification: Card, Report, Title, Supl. Note, Descriptor, Abstract	10
3. First Corporate Author	70
4. First Corporate Author Code	10
5. Second Corporate Author	70
6. Second Corporate Author Code	10
7. Title	240
8. Short Title	10
9. Descriptive Note	40
10. Authors (allow for 10)	200
11. Date	10
12. Pagination of Document	10
13. Originating Agency Series Number (allow for 2)	60
14. Contract Number (allow for 2)	40
15. Project Number (allow for 2)	40
16. Two Task Numbers, Two Work Unit Numbers	20
17. Other Series Numbers (allow for 2)	60
18. Release Limitations	10
19. Security Group	10
20. Copy Number	20
21. Control Number	20
22. NOFORN Codes	10

Block 2

1. Supplementary Note	100
2. Descriptors (allow for 48)	480

Block 3

1. Abstract	980
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Unclassified
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1. ORIGINATING ACTIVITY (Name and address) BOOZ ALLEN APPLIED RESEARCH, INC. 4733 Bethesda Avenue Bethesda, Maryland 20014		2. SECURITY CLASSIFICATION Unclassified
3. REPORT TITLE Mechanization Survey of the Army Biological Laboratories, Technical Library, Fort Detrick, Maryland		
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Final Report of on-site survey		
5. AUTHOR(S) (Last name, first name, initial) G. A. Kershaw, D. Crowder, J. E. Davis, E. G. Loges, E. Merendini, S. M. Thomas		
6. REPORT DATE September, 1966	7A. TOTAL NO. OF PAGES 117	7B. NO. OF PAGES 6
8A. CONTRACT OR GRANT NO. DSA-7-15489	9A. ORIGINATOR'S REPORT NUMBER(S) 914-1-4	
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[illegible][illegible]

It is important to note that the results of the regression analysis are not statistically significant for the variables *Age* and *Gender*. This may be due to the small sample size of the study, which may not have been large enough to detect significant differences between the groups. The results of the regression analysis are also not statistically significant for the variable *Age*, which may be due to the small sample size of the study, which may not have been large enough to detect significant differences between the groups.

With little or no change in the composition of the three groups, selection was not the expected factor in the last training, but the same could then be made. If the last group selected more on the method of selection, the group would be more likely to select the other two groups, leading to more groups in the next round.

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