ILLINOIS
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

PRODUCTION NOTE

University of Illinois at
Urbana-Champaign Library
Unpublished Research Reports: A Problem in Bibliographical Control

by Eugene B. Jackson
Chief, Office of Aeronautical Intelligence, National Advisory Committee for Aeronautics, Washington, D.C.

Present day documentation of science and technology involves a newly significant factor that emerged from the Second World War -- the unpublished research report. Although the research efforts in science and technology of the laboratories of industry, educational institutions, foundations, and governmental agencies have for some years been recorded by means of research reports(1), they were an insignificant problem for technical librarians. This was due to their small numbers; their prompt conversion into another more conventional form (periodical articles, theses, talks before professional groups) or to their permanent suppression for trade, patent, or military security reasons.

The policy of decentralization of research followed so successfully by the Office of Scientific Research and Development (OSRD) resulted in a veritable flood of research reports. As these reports possessed but one common characteristic -- their inconsistency -- steps were taken by the OSRD in an effort to control them(2). The repercussions are still being felt, since the present estimates of the Research and Development Board show that the seeds sown by the OSRD research program (as continued by the Department of Defense agencies) result in the annual production of between 100,000 and 150,000 research reports(3).

Typically the research report outlines results of research conducted on a specific project or group of projects and is intended to inform the sponsoring agency of the progress made or conclusions reached. This report is not published (in the accepted sense), few copies are prepared, and distribution of these copies is rigidly controlled by the sponsoring agency. The existence of the research report is not readily determined as it does not appear in the usual trade literature or bibliographical tools. It may not be purchased. It is normally prepared by some near-print process, but it may have any conceivable format.

Research reports on subjects ranging from the amplitude of ocean waves to design studies of guided missiles are prepared by large universities, small colleges, research foundations, commercial laboratories, industrial laboratories, military agencies, and individuals acting as "personal service" contractors. Examples selected at random include reports by Purdue University to the Office of Naval Research, by Harris Research Laboratories to the Army's Office of the Quartermaster General, and by Rand Corporation to the Air Force. They may be prepared under contract or through transfer of funds, and most of them have military security classifications. They may be weekly, semi-monthly, monthly, quarterly, semi-annual, or annual progress reports on one or more projects, with valuable disclosures of negative results as well as the hoped-for positive ones. The reports may be routine recounting of difficulties in obtaining supplies or competent personnel, or they may be extensive technical reports on significant problems encountered or noteworthy discoveries made
during the course of the investigation. Frequently the most valuable of all are the final reports that summarize the results of the entire project's work(4).

As early as the autumn of 1944 the Army Air Forces recognized the potential value of similar reports being produced in enemy countries(5). Foreign language difficulties and extensive use of code words were the principal additional barriers introduced into the problem of handling the hundreds of thousands of industrial and governmental reports captured by the victorious allies. Later the President by Executive Order directed that these captured materials be exploited for the benefit of our defense agencies and our industrial concerns.

**Cataloging the Research Reports**

Serious attempts at solving the problem of bringing research reports under bibliographical control made by three agencies working in slightly different fields will be described here. They are the Navy Research Section of the Library of Congress (formerly known as the Science and Technology Project), the Office of Technical Services (formerly known as the Office of the Publication Board) of the U.S. Department of Commerce, and the Central Air Documents Office (formerly known as the Air Documents Division, Air Material Command, U.S. Air Forces). A fourth major agency, the Atomic Energy Commission, has had to face peculiarly difficult problems in the already complicated field of research report documentation(6). Although the AEC procedures will not be described as fully as the first three, their general agreement with the previously mentioned agencies will be indicated. The experiences and practices of two smaller documentation agencies operating in special fields will be mentioned as examples of many others that did or do exist. They are the Quartermaster Corps Project, formerly conducted for the Office of the Quartermaster General by George Washington University in the field of food, textiles, shelter, and environmental protection(7); and the Office of Aeronautical Intelligence of the National Advisory Committee for Aeronautics, in the field of pure and applied aeronautical research.

The details of the attack on research reports by the various documentation agencies differ greatly, but certain practices in regard to portions of the problem are common to them all. An early forward step was the decision of the Office of Scientific Research and Development (OSRD) to assign a serial OSRD number to every report that was issued in partial fulfillment of an OSRD contract. These numbers were consecutive and were assigned to the reports serially by pure chance; they were not related to the subject matter nor to the source of the document but they did form a unique means of identifying and citing such unconventional reports. Central Air Documents Office (CADO), Navy Research Section (NRS), Office of Technical Services (OTS), Atomic Energy Commission (AEC), and more recently the National Advisory Committee for Aeronautics (NACA) have adopted this same scheme. Thus the principle of assignment of arbitrary identification numbers may be accepted as a first general principle in dealing with research reports.

The next general finding was that the author of a report was frequently not as important nor as well known as the research agency with which he was connected. The accepted cataloging practice of making main entry under author was now subjected to question. The author's "fall from grace" was due both to the greatly increased specialization of the research organization and to the flood of new workers entering the research field. Thus one might not know that a certain report were valuable if a Dr. Richard Roe had written it, but he would know immediately that it was valuable if the work had been done at the ZYX Laboratories. The old corporate author entry rules were reexamined with a view to simplification and revision. The new main entry -- the corporate author -- has many aliases these days (originating agency, source, corporate agency, or originating source) but for brevity it shall be referred to here as source entry. The second general principle, entry under source, is becoming firmly
The third general principle is that titles are given in full, including cryptic references of various kinds such as chemical symbols, code words, model designation, and the like.

An abstract of the content of the individual research report, normally one of the informative type, is usually included on the catalog cards published by these agencies. Standards for the abstracts vary greatly (as to length, for example, CADO limits them to a certain number of words, while NRS permits any length deemed necessary) but the agencies are agreed that preparation of abstracts is outside the ability of most librarians, and is better done by subject specialists. NACA has pioneered among the agencies in the consistent use of author abstracts, the type recommended recently as the practical solution to the abstract problem(8).

Some agencies have the subject specialists assign certain of the subject headings, while others rely on their librarians. Subject headings vary greatly but tend to be more direct than the usual library headings and may or may not include code words and model descriptions. An example of a code word is CROSSROADS for the atomic explosions at Bikini; an example of a model designation is B-29 for the "Superfortress". NRS inherited a list of subject headings from the Office of Naval Research that has been compiled by Jerrold Orne and Grace Swift while they were on active duty with the Navy. Some 500 copies of the list were circulated for comment. Rather radical changes were deemed advisable and an entirely new list of subject headings was issued by NRS in 1948 containing some 4500 headings, while a supplement covering some 3000 changes and additions was issued in May 1949. A current estimate is that NRS has nearly 16,500 headings. This growth is a graphic illustration of the rapid changes occurring in the field of research report subject headings.

OTS started out with the same Orne-Swift list of headings and issued a new edition which forms the basis for the OTS headings used today. Not to be outdone, CADO started its own list of subject headings in London in the summer of 1945 and is still in the process of making extensive revisions to it. Electric accounting - tabulating machines have been used in preparing lists of changes and revisions. CADO headings
are characterized by extensive use of code words and model designations, while NRS uses none of these. NRS feels that under its plan, the entire list of subject headings may be freely distributed while portions of CADO's list must remain confidential. CADO feels that its system makes for faster reference service. AEC headings are similar in many respects to NRS while NACA's developed without plan over the years and are now in process of being completely edited for the first time.

The information about each research report, discussed thus far, is usually disseminated in the form of a catalog card or an entry in an abstracting journal. In some agencies but one typing is sufficient for both purposes; others (the AEC for example) must type the information twice. Offset reproduction from copy prepared on electric typewriters is used by CADO, NRS, and AEC, while QM Project uses a vapor process of reproduction and the NACA uses special office-type duplicators with fast-drying inks. NRS and CADO differ in make-up procedure. CADO types on preprinted sheets having boxes for insertion of proper information; six of these sheets are then mounted on one large sheet, with one negative being prepared photographically of the layout. NRS uses the one set of cards in various arrangements, photographing each re-arrangement of the cards for publication purposes, essentially the same method as that used in the preparation of the index to Books in Print, with many refinements (9).

Acquisition, Processing, and Distribution of Research Reports

The typical post-war documentation agency did not have to worry at first about obtaining documents for processing. In fact, their sole concern during this period was to keep up with the supply. For example, the committee of experts sent to Europe by the Army Air Force, which developed into the organization known now as CADO, found that ton upon ton of captured documents had been flown into London and had been stored in an apartment house. For the first several months, receipts of documents were recorded in "tons per day", as shipments continued in a steady stream. Included in the crates were research reports from leading German aircraft companies, German industrial organizations, and German governmental research agencies. As there were only two librarians in the London group and even they were appalled at the mass of material, it was obvious that radical measures for the control of these reports were necessary. It was decided that sorting could be accomplished most expeditiously by source, as the name of the research laboratory or agency could be readily ascertained from the document while the author's name was frequently absent and sometimes a title was not available. After sorting out the mass of reports into sources (documents from some sources occupied whole series of rooms) a priority system by broad subject matter was established by military intelligence personnel. So many unfamiliar terms and codes were encountered that work on a German language dictionary had to be instituted at once. Everyone helped in the formulation of subject headings as there was no list of any kind available there. Naturally the resulting list included many duplications, inconsistencies and inadequacies but it permitted a start to be made on the processing. Here CADO established two policies which it follows to this day: one, that only selected documents would be included (the proportion ranged from one in ten documents to one in three documents screened), and two, that each item processed would be microfilmed automatically as part of the processing procedure.

Coming into the picture somewhat later, NRS was able to take advantage of its favorable location. Any number of librarians were available in Washington for consultation by phone or in person (as contrasted to CADO's six month's work in Europe). Great help was found in the work done in preliminary organization of the documents by the Office of Coordinator of Research (Navy Department) in 1944, and by its successors (Office of Research and Inventions, and still later the Office of Naval Research). It was June 1947 before NRS actually began working on its backlog of reports inherited from ONR; August 1946 had marked ONR's first contact with the Library of Congress on this problem of how could so many research reports be controlled.
As NRS secured all its reports from ONR it was thus sheltered at first from any concern with acquisitions. As a result NRS could spend valuable time in a somewhat radical approach to subject headings. Its emphases were on directness, authoritativeness, and practicality (no headings were listed that were not actually used on one or more reports).

OTS had definitely more reports than it could handle for several months. It had been set up by Executive Orders 9568 (June 8, 1945) and 9604 (August 25, 1945) to disseminate information of the existence of reports on research and development work in documents returned from abroad and the unclassified (without military security classification) research reports issued by the Federal agencies -- mostly military services, it turned out. It fell heir to hundreds of packing cases of reports, and made a valiant effort to include each item in the Bibliography of Scientific and Industrial Reports, in contrast with CADO's and NRS's policy of selectivity. Their sorting was done by source with main entry in the Bibliography being source entry. A high level of efficiency and more nearly settled processing procedures have enabled the three agencies to maintain high rates of production in the face of personnel cuts. As a consequence, they each have active acquisition programs at this time, with a certain amount of triplification being a natural and unavoidable result.

As the NACA was doing research projects for both the Air Force and the Navy, it received reports from those sources, from its own research contractors (mainly universities), and from abroad. In the latter case, exchange agreements involving NACA publications for those of foreign countries place it in a favorable bargaining position, while NRS and CADO had to rely to a large part on military intelligence channels. In contrast to the NACA's centralized publishing procedure that assisted its acquisition program, AEC suffered from an acute case of decentralization.

Wherever possible these agencies simplify the processing of these documents to maintain "production". They all have informative abstracts prepared for the documents by subject specialists; NRS makes a special point of hiring female scientists for abstracting, NACA uses author abstracts exclusively and of unlimited length (as long as four or five catalog cards full), while CADO severely limits its abstracts to less than one card. Varying goals of production are established -- at one time, production goals were as follows: for NRS, 100 items worthy of listing per day; for OTS, 100 to 150 items per day; for CADO, 200 items per day.

It will be recalled that the weekly Bibliography of Scientific and Industrial Reports was the means of disseminating information about the OTS's so-called "PB-reports" from January 1946 to June 1949, and that it was followed by the monthly Bibliography of Technical Reports (July 1949 to date). No catalog card sets are furnished its patrons. NACA furnishes card sets of its own reports only (bound into the reports and removable therefrom). NRS relies on its Technical Information Pilot (TIP) supplemented by very few card sets. AEC relies on its semi-monthly Nuclear Science Abstracts and scattered card sets. CADO relies on its Air Technical Index (ATI) supplemented by numerous card sets available to any qualified (from military security standpoint) agency.

The Bibliography of Technical Reports is generally available in libraries and may be purchased at $5 per year from the U.S. Department of Commerce. Research reports are grouped in it by broad general subject, with "PB number", cost of reproduction, and usually a short abstract. Most listed items are available only in microfilm or photostated form from the Photoduplication Service of the Library of Congress, although a few of the more popular publications have been reproduced by a near-print process and are available directly from OTS. Some 150,000 items have been announced through the Bibliography.
The Nuclear Science Abstracts in its unclassified form (without military security classification) is offered on an exchange basis by the Technical Information Division, AEC, Oak Ridge, Tenn., or on a purchase basis at $6 per year from OTS. It includes abstracts of periodical articles and other published materials plus unclassified or declassified AEC research reports, arranged by broad subject. Over 5,000 documents have been announced in this manner. Punched cards and electric accounting-tabulating machinery are utilized to maintain its index. Although AEC is contemplating certain changes in its supplementary card service as mentioned elsewhere in this paper, the present practice with regard to the order of items on the catalog cards is as follows: personal author, source (in parentheses), title, date, brief collation, contents note (indicative annotation), tracings (on verso); but no contract numbers are used.

Since the catalog cards are included in NACA unclassified publications, they may be examined in any of the recent research reports of the following series, generally available in technical libraries and larger public libraries: Technical Notes, Technical Memorandums, and Wartime Reports. The order of items on the cards is as follows: subject heading and subject classification number along top of card, report title at left margin, author on separate line at left, series note also on a line at left, date (month and year) on the next line, and author's abstract on verso. The NACA Reports printed by the Government Printing Office as separates and as part of the bound NACA Annual Report do not have the cards. All security classified NACA documents have the same type of cards as outlined above.

Since the NRS's Technical Information Pilot is prepared from its catalog cards, the latter will be described first. The card is essentially a two column affair, with the rule being 3-1/2" from the left edge of the card. While the space to the right of the rule is devoted to the tracings (each beginning a new line), the order of items to the left of it is: letter indicating broad subject field, serial number of report assigned by NRS, source, contract number (all the preceding on top line, followed by the remainder in paragraph form), title (in block capitals), author, date, total pages, illustration statement, series note, military security classification (next to right margin), and abstract (blocked paragraph).

In preparing TIP, the information to the right of the rule is covered up in the layouts, but it is used in connection with the machine devices to prepare the indexes. Catalog cards are arranged on layouts reducing to a page size of 8 x 10-1/2". As in aid to distribution and for military security reasons, layouts of each security classification (unclassified, restricted, confidential, secret) are reproduced on different colored paper stock. Each issue of TIP has documents of but one security classification, has its own index, and is punched for insertion in a three-ring binder. Indexes are cumulated annually for each security classification and issued separately. Over 10,000 unclassified documents have been announced through TIP plus an undisclosed number having security classifications. An idea of the subject coverage of TIP may be gained from an examination of Table 1.

The Air Technical Index (ATT) of CADO, like TIP, is intended as an announcement service and uses cards and sheets, but in a different manner than NRS. Instead of having bulletins of 12 pages or so as in TIP, CADO elected originally to use transparent sheets 9-1/2 x 12" in size, each with information covering six documents. These so-called "ATTten"s could then be reproduced by the recipients in any manner they chose -- blue-print, brown-line, photostat, ammonia process -- and then distributed to the engineers and scientists in the research activity involved. Later it was found that the transparent sheets could not be procured in uniform degrees of transparency and the reproduction facilities of the CADO patrons varied so in quality that uniform results were not being achieved. Also, the original transparent sheets tended to curl, were difficult to file, and picked up fingerprints. As a result of
TABLE 1. SUBJECT CLASSIFICATION USED IN TECHNICAL INFORMATION PILOT

<table>
<thead>
<tr>
<th>Basic Science</th>
<th>Applied Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Mathematics</td>
<td>F Flight</td>
</tr>
<tr>
<td>B Physics</td>
<td>Q Ordnance</td>
</tr>
<tr>
<td>C Nuclear Physics</td>
<td>R Power</td>
</tr>
<tr>
<td>D Geophysics and Geography</td>
<td>S Hull</td>
</tr>
<tr>
<td>E Mechanics and Materials</td>
<td>T Auxiliaries</td>
</tr>
<tr>
<td>F Fluid Mechanics</td>
<td>U Detection</td>
</tr>
<tr>
<td>G Electronics</td>
<td>V Communication</td>
</tr>
<tr>
<td>H Chemistry</td>
<td>W Tactics and Navigation</td>
</tr>
<tr>
<td>J Biological, Medical and Social Sciences</td>
<td>X Logistics and Bases</td>
</tr>
<tr>
<td>ZZ Bibliographical Investigations</td>
<td>Y Medicine, Surgery, and Dentistry</td>
</tr>
<tr>
<td></td>
<td>Z Personnel and Training</td>
</tr>
<tr>
<td></td>
<td>ZZ Bibliographical Investigations</td>
</tr>
</tbody>
</table>

these difficulties and those connected with the necessary examination of many sheets to find a desired document after the sheets had served their original announcement purpose, CADO decided to reproduce the ATI sheets on card stock and supply as many copies of each sheet as was desired by the patron. The sheets themselves could be circulated to the staff and then cut up into the six component parts and filed as cards in the patron's card catalog.

The card-outlines that formed the ATI sheets (ATItems) were preprinted forms with boxes for the typist to fill out; each box had a label so that equivalent information appeared in the same area of each card, which helped the engineers and other non-librarians in the use of the card. At the left margin of the card, the first box had the following labels, each on a separate line: Title, Author(s), Originating Agency (Source), Published (Issued) By. The matching box was one inch, from right margin and included the following: ATI (serial number), Revision (date), Originating Agency Number (series note), and Publishing Agency Number. Next in a narrow band of boxes the width of the card were the date, security classification, country of origin, language in which issued, total pages, and the illustrations note. The abstract then occupied a space 1-1/2 x 5". The next line indicated the agency where copies of the report itself should be requested. A final two inch box to the left included distribution information, while the subject headings were in the matching three inch box to the right. Critics of the ATI card claimed that it was too cluttered and wasteful of space; however, it did speed up the typing process without question and may have had a favorable affect on filing speed. It was the most radical of the formats advocated for research report catalog cards.

Although CADO had but three security classifications to contend with in contrast to NRS's four (ATT was not issued in an unclassified form), it still had the thorny problem of proper distribution of the announcement service. Accordingly, with the financial assistance of the Navy, it contracted with the Institute of the Aeronautical Sciences for a study to determine the major fields of research in aeronautics and allied sciences (to be termed "Divisions") and the minor fields (called "Section") within each major field. Some fifty divisions were developed through coordination with research men in industry, research contractors, governmental research activities and elsewhere. A sample division of this system (called at various times the Standard Aeronautical Index, the Standard Aeronautical Indexing System, and the Air Technical Index Distribution Guide) is given in Table 2.
TABLE 2. SAMPLE DIVISION OF AIR TECHNICAL INDEX DISTRIBUTION GUIDE

<table>
<thead>
<tr>
<th>Division 6 Reciprocating Power Plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sections 0</td>
</tr>
<tr>
<td>1 Cooling</td>
</tr>
<tr>
<td>2 Induction and Supercharging</td>
</tr>
<tr>
<td>3 Combustion</td>
</tr>
<tr>
<td>4 Ignition</td>
</tr>
<tr>
<td>5 Exhaust System</td>
</tr>
<tr>
<td>6 Vibration</td>
</tr>
<tr>
<td>7 Fuel System</td>
</tr>
<tr>
<td>8 Lubrication</td>
</tr>
</tbody>
</table>

A certain amount of misunderstanding arose during the development of the above system as to whether it was intended to be a classification system of technical knowledge or a guide to the distribution of information on the existence of material in certain fields of knowledge. The final form of the name indicates the decision. In practice, each patron was permitted to receive announcements of documents only in those Divisions and Sections for which he was cleared by the military authorities. While the sheets were still being issued (prior to the spring of 1950 when they were completely superseded by the catalog card service), code symbols, like "R-3-8-12", appeared on the sheets. This is interpreted as a Restricted ATI sheet (having the usual six documents) in Division 3 (Electronics), Section 8 (Electronic Tubes) and the twelfth such sheet issued.

CADO has used microfilming machines similar to those used for bank checks to prepare what it calls "demand bibliographies". When a request is received from an agency for all research reports on a certain subject, the proper subject headings are searched, the cards are withdrawn and fed through the machine with the resulting microfilm printed on a surplus V-mail machine and forwarded as a roll to the patron. Obviously, the procedure would work equally well for a bibliography of documents from a specified source or by a certain author. NRS and CADO have done some commendable work in assisting agencies to use their services. Personal visits of the staff members to various installations, holding of conferences (one such in April 1949 at Wright Field attracted over 150 persons interested in research report documentation) using split catalogs, preparing card filing manuals and subject heading lists, furnishing printed guide cards (CADO), and revision of catalog card format are among the devices successfully used by these documentation agencies.

Summary

A new tool for the organization of research knowledge especially in the fields of science and technology has emerged. Outstanding characteristics of the research report are that they are not listed in the usual trade literature nor in library tools, they are not published, they are issued from a multitude of sources, their distribution is strictly controlled, they use a multitude of formats and frequencies, they are consistently inconsistent, and they possess (or formerly did) a military security classification.

Procedures and experiences of a few of the new documentation agencies in meeting the challenge of the research report were examined here in an effort to determine if common practices were emerging so that they could be recorded and predictions made for the future. Firstly, the Navy Research Section of the Library of Congress, and activity under contract NAomr 13-47 to the Office of Naval Research, has the task
of serving as an announcement agency on technical research documents of domestic origin of interest to the Navy. It is also to perform related tasks, such as the preparation of bibliographies, on Task Orders issued by the ONR. The vehicle of its announcement service is the Technical Information Pilot, issued by security classification in the form of irregular bulletins having annual cumulative indexes. NRS offers a supplementary card service, with subject heading lists, filing manuals, and other necessary tools. The services of NRS are free to institutions cleared by the Office of Naval Research. Reports indexed are available on loan. Over 10,000 unclassified research reports have been announced to date through the Technical Information Pilot, plus additional thousands of classified reports. Bibliographical control over documents not selected as worthy of inclusion in TIP is through cards prepared by automatic typewriters and then filed by subject headings.

Secondly, the Central Air Documents Office is a joint Air Force - Navy (and later Army) effort established by joint order of the Secretaries of the Air Force and Navy to provide a central documentation agency to receive, organize and disseminate aeronautical data on a selective basis, within the limitations of military security regulations, through the medium of the Air Technical Index. Formerly the ATI was issued both on sheets (containing information on six documents each) but is now being issued in catalog card form only. CADO, too, has furnished lists of subject headings for the use of recipients and has furnished printed guide cards in addition. All documents are microfilmed and copies are furnished free of charge to qualified agencies, either in microfilm or full-size photographic reproduction. Documents that do not reproduce satisfactorily are available on loan as well as documents not considered worthy of inclusion in the Air Technical Index. The latter documents (called non-ATI) are controlled through cards reproduced through vapor processes and filed by source. In addition to lists of subject headings, CADO has prepared a German-English technical dictionary, bibliographies, translations, and other publications of help to those working with research problems. Over 80,000 items have been announced through the ATI service. CADO abstracts current periodical articles, as well as research reports, and issues the former abstracts in its Technical Data Digest, a monthly unclassified publication. While the ATI service may be received only by those whose requests are approved by the contracting officers of the respective military service, Technical Data Digest is available generally.

Thirdly, the Office of Technical Services, Department of Commerce, was established by Executive Order to disseminate information concerning both captured enemy technical and industrial reports and unclassified research reports of other governmental agencies. It handles only unclassified reports and must charge for any reports furnished. Through an arrangement with the Photoduplication Service of the Library of Congress, its reports may be purchased in photostatic or microfilm form. Although the highest PB number it has assigned to date is 110,500, some 150,000 individual reports (including supplements and translations) have been listed in its Bibliography of Science and Industrial Reports and its newer Bibliography of Technical Reports. Over 90% of all reports it has received are listed in the two bibliographies. The services of OTS are available to all who desire to use them but its special province is the assistance of the small business man. It is the least typical of the agencies covered here.

Fourthly, the AEC has a strong documentation program serving its special field of interest. In addition to the Nuclear Science Abstracts covering periodical literature, unclassified and declassified research reports, it also has a catalog card service for the convenience of its laboratories, contractors and cooperating agencies. Its cards include NRS-type subject headings and are the most conventional of those issued by any of these documentation agencies. Some interesting organizational and production innovations are and have been used. The decentralization and compartmentalization policies of the Commission introduce numerous difficulties into the AEC technical information program.
Fifthly, the National Advisory Committee for Aeronautics is cited as a smaller documentation activity working in a special field - aeronautical research - that supplies a card service for its own reports by attaching them to the report itself. The cards are included in both classified and unclassified documents, but not in the Reports issued for NACA by the Government Printing Office. For its internal use, it has a 32-year accumulation of cataloged documents especially strong in foreign research reports. It has a stronger centralized document production set-up than the other agencies covered, issuing a couple of hundred research reports per year.

These documentation agencies tend to assign non-significant serial numbers to the research reports they process, to enter under source, to use full titles, to employ direct and detailed subject headings, to include abstracts, to simplify collation, to use machine methods and production-line techniques, to utilize photo-offset and other near-print processes, to advocate split card catalogs, to subject the catalog maintenance problem to continuing study, to have distribution difficulties, and to have an abstract journal in addition to catalog card services.

Current developments indicate that there will be closer cooperation among the documentation agencies in the future than in the past; that there will be more standardization in catalog card format, subject headings, and abstracting; and that duplications in distribution and acquisition will be eliminated. It is hoped that the emphasis on the five documentation activities here will not give the impression that no others exist -- quite the contrary. However, it is believed that most of the principles mentioned herein would be re-echoed by a study of the activities of the remaining agencies, and are thus truly indicative of the modern trend in the control of a valuable source of technical information -- the research report.

FOOTNOTES

(1) In the field of aeronautics, for example, both the Air Material Command at Dayton and the National Advisory Committee for Aeronautics at Washington have accumulated hundreds of thousands of reports or research during the thirty-odd years of their existence.


(4) For a discussion of industrial research reports and the method of controlling them in one industrial library, see Laura Shorb, "Research Records in a Library," Special Libraries 40 (1949) 12-16.


* * *

Numbers in this series are issued at irregular intervals and no more often than monthly. Single copies of any issue are available free upon request; appropriate institutions wishing to receive a copy of all issues should so indicate in writing. The Occasional Papers will deal with some phase or other of librarianship, and will consist of manuscripts which are too long or too detailed for publication in a library periodical, or are of specialized or temporary interest. The submission of manuscripts for inclusion in this series is invited. Material from these papers may be reprinted or digested without prior consent, but it is requested that a copy of the reprint or digest be sent the editor. All communications should be addressed to Herbert Goldhor, Editor, Occasional Papers, University of Illinois Library School, Urbana, Illinois.