2nd COLLOQUY ON NORTHERN LIBRARY RESOURCES

Hanover, New Hampshire
21 May–2 June 1972

CORPS OF ENGINEERS, U.S. ARMY
COLD REGIONS RESEARCH AND ENGINEERING LABORATORY
HANOVER, NEW HAMPSHIRE

Introduction

As decided during the final session of the 1st Colloquy at Edmonton in 1971, the host organization oriented the program around its activities.

The questionnaire circulated prior to the Edmonton meeting was revised by Paul McCarthy, University of Alaska, and sent to all organizations invited to attend the 2nd Colloquy. Packages of the resulting descriptions were distributed to attendees; additional forms, returned too late for distribution at the meeting, have been reproduced and are being forwarded with these proceedings.

Many thanks are due to the CRREL meeting staff, Mr. Benjamin Yamashita, Mrs. Pat Ricard, and Miss Barbara Szyman, and to the engineers and scientists of CRREL who participated in the program.

Also appreciated were the services of Mr. William Mattox, Geography Department, Dartmouth College, who participated in the Users Panel; and Mr. Walter W. Wright, Curator of Special Collections, Dartmouth College Library, and Mrs. Erika Parmi, who hosted a visit to the Stefansson Collection.

Planning Committee

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2nd COLLOQUY ON NORTHERN LIBRARY RESOURCES

31 May, Evening Session

Registration and informal social hour.

1 June, Morning Session

Colonel J. F. Castro, CE, Commander and Director, USA CRREL, welcomed Colloquy participants; groups then toured the Laboratory.

Mr. Wesley Pietkiewicz, Technical Information Officer, described the CRREL Information System. Presentations on the Cold Regions bibliographies were made by Dr. Geza Thuronyi, Mrs. Natalie Voshinin, and Mr. Robert Moesker of the Library of Congress. (See attachments).

1 June, Afternoon Session

During the "Users Panel", which had been suggested at Edmonton, Mr. Richard Berg, Mr. Anthony Gow, and Mr. Wayne Tobiasson, CRREL, and Mr. William Mattox, Dartmouth College, discussed some of the problems in locating collections of materials relating to polar research, and the need for coordinated bibliographies and directories of agencies with various types of collections.

A visit to the Stefansson Collection, Dartmouth College Libraries, was of great interest; unfortunately, it is no longer a complete collection of all arctic materials. Journals, documents, and many books have been scattered throughout the respective departments of the main library. Manuscripts and expeditionary accounts of specific eras now constitute most of the holdings.

1 June, Evening Program

Although not a formal part of the proceedings, a program of slides and music, "Suzanne's Lament", which was presented by the Coastal Research Center, Department of Geology of the University of Massachusetts, emphasized the "ecological" mood of present day northern research.

2 June, Morning Session

Miss Maret Martna, Washington Office of the Arctic Institute of North America, brought us up to date on the status of the Arctic Bibliography, which is being automated. Mrs. Elizabeth Schwartz described the holdings and services of World Data Center A: Glaciology, at the U.S. Geological Survey in Tacoma, Washington; Mrs. G. A. Cook, Boreal Institute, reported on progress of "Northern titles" (See attachment). Mr. Guy Guthridge summarized the sponsored activities of the office of Polar Programs, National Science Foundation. Mr. Harry King described the Scott Polar Research Institute's, "Bibliography of Recent Polar Literature."

"Other CRREL projects," presented with slides by Mr. Paul Sellmann, of CRREL's Experimental Engineering Division, covered the Tundra Biome project and work in connection with highway and pipeline problems in Alaska.

An unexpected bonus was the showing of the unedited, new film from the AIDJEX project of the current season, by Sergei (Roger) Olencoff, who had just returned from Barrow, where he had participated in AIDJEX under the auspices of the National Science Foundation.

2 June, Afternoon Session

H.G.R. King, Scott Polar Research Institute, Chairman.

The future of "Colloquy" programs and projects was discussed.

A tentative invitation to meet at Cambridge, in 1973 had been mentioned at Edmonton. Mr. King, at Hanover, pointed out some of the problems that had arisen, but promised to investigate the possibilities of this meeting, and agreed to be temporary Chairman for the next Colloquy.

Mr. Richard Engen, Alaska Division of State Libraries, asked for the opinion of the group as to the continuation of the Northern Libraries Bulletin, undertaken by Mrs. Phyllis Nottingham at the time of the Edmonton meeting. Everyone agreed that it was worthwhile and that, hopefully, it should be continued. There were expressions of thanks for Mrs. Nottingham's work and for the support of the State Library.

Discussion of the "directory" brought out some of the difficulties of decision on coverage, format, etc. Material collected at the two colloquies is a good start. The possibility of help from the National Referral Center, Library of Congress, or from the Polar Information Center, National Science Foundation, was mentioned, but no definite commitments were made.

After these discussions, and after thanks from the chairman for the enthusiastic participation of the members and for the support of CRREL personnel, the Colloquy adjourned.

USACRREL INFORMATION SYSTEM

Wesley Pietkiewicz

Introduction

As the Army laboratory for Cold Regions Science and Technology, USACRREL engages in an active information gathering, analysis and dissemination program.

Stated briefly, USACRREL has accepted the responsibility to gather together everything known that is relevant to cold regions science and engineering, to organize this information in a systematic fashion so that we and others know what information exists, to analyze and synthesize the contents in such a fashion that new knowledge is created and to make this information available to the Army and the scientific and engineering community in general.

Information Gathering and Processing

Our information gathering and computer processing operations are centered around the Cold Regions Bibliography Project Office which we have sponsored for the past 20 years at the Library of Congress in Washington. Our specialized staff in addition to reviewing the world's literature received at the Library of Congress also depends on the USACRREL Library and exchange agreements with many foreign countries for additional pertinent documents. Since 1950 over 45,000 technical documents pertaining to cold regions science and engineering have been microfilmed and accessioned in our information system. Each year we add approximately 5,000 new documents. Each month CRREL publishes a current awareness listing of new accessions. This listing along with a microfiche of each document is made available in most cases within a few weeks of receipt of a document. Annually, USACRREL Report 12, Bibliography on Cold Regions Science and Technology, with computer printed author and subject indexes is printed and distributed free of charge to over 500 addressees. An estimated 200 additional copies are distributed via the National Technical Information Service, Springfield, Virginia.

In 1968 USACRREL adopted the Library of Congress MARC bibliographic format for information processing using the computer. We were the first bibliography to do this. For an output we adopted the time proven format of Nuclear Science Abstracts. All of our documents are filmed onto microfiche using a new Bell & Howell step and repeat camera which USACRREL has installed in our project office at the Library of Congress.

Role of the User

One of the most attractive features of the USACRREL informative system is feedback received by the bibliographic staff from the user. There are numerous opportunities for such feedback.

When the annual contract between the Library of Congress and USACRREL is negotiated, the entire program is subjected to a thorough review, which often results in changes. Between contract negotiations the project leader at the Library of Congress and the project monitor at USACRREL maintain close liaison. Notes and bibliographic materials from the project monitor, the USACRREL librarian and USACRREL scientists are sent through the mail continuously. Direct telephone communications are maintained. All USA CRREL publications and progress reports are promptly made available to the bibliographic staff. The project at the Library of Congress is continually visited by the USACRREL contract monitor and by those of the USACRREL scientists with particular interest in the bibliography. Finally, the project leader and members of the Library of Congress bibliographic staff frequently visit USACRREL, where they confer with the scientists individually or in groups.

One of the vital areas of feedback is that of initial selection of pertinent items. Topics of emphasis within the basic area of coverage frequently change. In response to requests by research scientists, special efforts are made to seek out material on specified subjects, some of which may normally be considered of peripheral interest. Scientists also call the bibliographic staff's attention to specific references, or send reprints or conference papers acquired through professional contacts. Additional input is made from the USACRREL scientists who serve on many national and international committees.

Another fruitful type of feedback is that in the area of indexing. In their dual capacity as users of the bibliography and as practitioners constantly exposed to the latest technical terminology (and in fact contributing to the development of such terminology), USACRREL scientists are in a unique position to give advice concerning effective indexing language. From time to time special sessions are arranged between the bibliographic personnel and interested scientists to discuss questions of vocabulary and indexing method.

A third useful area of feedback is that of bibliographic format. The USACRREL scientists were instrumental in developing the initial format with particular emphasis on ease in quick scanning. They have also requested changes from time to time. The tag structure of the MARC input format makes it easy to change the output to meet the user's convenience.

Benefits to the General User

As an information support activity to a group of research scientists the Cold Regions Bibliography system seems to be ideally constructed. Due to the fact that the user is practically built into the system, quick and thorough responsiveness to requirements of coverage and presentation is assured to the maximum possible degree. In addition to being used for purposes of USACRREL, the bibliography is disseminated to the general public. It could be argued that a project so responsive to the wishes of a single group would not be able to serve the broader demands of the research community at large. However, the basic field of physics and mechanics of

snow, ice and permafrost, and engineering in cold regions is covered regardless of temporary shifts in interest and emphasis. Thus the public's interests, as far as basic coverage is concerned, are served. Secondly, USACRREL is large enough to represent a typical cross section of the entire community of cold regions scientists and engineers. Finally, through contract work for other agencies, and membership on many national and international committees, USACRREL has a pioneering role in its field and reacts immediately to the latest research needs. To mention just one recent example: USACRREL signaled its involvement in the laying of oil pipelines in arctic regions. The bibliographic staff responded by making a special effort to uncover pertinent literature in this area. A considerable number of items were accessioned, microfilmed and incorporated into the system. Much later, other agencies began making inquiries in this area and were gratified to find good coverage in the Cold Regions Bibliography. From such cases it may be safely concluded that close contact with the USACRREL scientists is an immense boost to the bibliography and, rather than detracting from its general usefulness, adds a measure of timeliness which would be hard to achieve without such contact.

The Project as Part of a Larger System

Finally, the Cold Regions Bibliography may be considered, at least potentially, as part of a larger polar information system. The MARC format used by the Bibliography for computer input has been nationally and internationally accepted as a standard format for interlibrary exchange of catalog data. By adopting it, the Cold Regions Bibliography has made itself compatible with other MARC records throughout the library world. But we could go one step further, and consider the Cold Regions Project as one cell in a network of interlocking information projects pertaining to cold regions science and technology. What we are doing could be done in the same way for other subject fields, whether discipline or project oriented. Wherever a clearly defined research area is represented by a strong research institute (or several institutions), an arrangement similar to the one between USACRREL and the Library of Congress could be worked out. All of them would use the same bibliographic input format (while retaining flexibility of output) and thus be mutually complementary and searchable. As more and more such arrangements are established, the area of fields of research covered would expand, approaching the ideal situation of total cold regions information coverage. A large information system conceived and gradually built up in this manner would be a living organism. Its component units would have their feelers extended directly into the area of day-by-day research. The advantages now enjoyed by the Cold Regions Project in literature acquisition, handling and indexing, would assure vitality and usefulness to the larger system composed of many such responsive units.

Information Analysis Function

I've discussed our information acquisition and information processing operations and user interaction with the USACRREL system. I would now like to brief you on the information analysis, synthesis and information transfer functions performed by USACRREL.

We believe that a bibliography, library or data center is only of limited value without the close interaction of working scientists and engineers. A user of information usually wants a specific answer, some specified data or a quick information summary. A long list of documents, many in foreign languages, seldom meets his needs.

The key element in a successful Information Analysis Center is the professional working scientist who maintain the closest contact with their technical professions and who, by being near the data, can make new syntheses that are denied those who do not have all the data at their fingertips.

The scientists and engineers at USACRREL are among the principal contributors to the literature on cold regions science and technology. For many years the USACRREL publications program has provided a principal and effective means of communicating the results of R&D and this laboratory's solutions to engineering problems in the cold regions.

To date USACRREL and its predecessor organizations have published over 2,000 technical reports, manuals, state-of-the-art reviews, translations and journal articles. All of our publications are made available to the scientific community as they are published. At present approximately 500 addressees receive our reports. In addition each month via correspondence, we receive approximately 350 requests for reports and answers to other specific problems.

Over the years we have recognized the value of state-of-the-art reviews and information summaries. USACRREL has a monograph series on various subjects such as climatology, snow and ice, avalanches, sewerage and water systems in the Arctic, etc. Several of these have been reprinted 2 and 3 times to fill requests. Similarly USACRREL has a very active program to acquire and translate foreign monographs on related subjects. In 1968 USACRREL in cooperation with the USGS began acquiring all pertinent Soviet monographs as published through Kampkins' Bookstore in Washington. Through this arrangement we have been able to acquire new books soon after publication. Many of these in turn are translated and made available to the scientific community.

As we look ahead one of the problems that should be investigated is the development of mechanisms for coordinating work among different centers. To be efficient we need to communicate well with each other, both domestic and foreign. We should divide work loads, make use of each other's products and services and agree on standards for machine processing and other methodology. We believe the MARC format that we have adopted is a good one, however, we invite other suggestions. With good communications we do not see the need for a central clearinghouse for arctic information. Rather, we believe that analysis and synthesis of existing information should continue to be performed by the scientists and engineers of the various agencies active in the arctic.

Foremost we must keep in mind that it is not just improving the effectiveness of gathering, storing, retrieving, analyzing and distribution information that we are concerned with, but rather the optimization of the entire cold regions science and technology efforts in this country and abroad and their application to solving mutual problems.

Acquisition of Slavic materials by the Library of Congress and their use by the Cold Regions Bibliography Project

Natalie S. Voshinin

The Cold Regions Bibliography Project (CRBP) monitors the progress of science and technology as related to Arctic problems in five Slavic countries: Yugoslavia, Poland, Bulgaria, Czechoslovakia, and the Soviet Union, the latter accounting for about 97% of the cold regions slavic bibliographic material.

Russian publications are obtained from these main sources:

1) The Publications Procurement Officer attached to the American Embassy in Moscow

2) Les Livres Etrangers in Paris

3) The Kamkin Bookstore in Washington, D.C.

4) Exchanges with Soviet Institutions

5) Dealer's catalogs (non-current items), and

6) Richard Abel Co., U.S. book dealer.

The Kamkin store also has a direct arrangement with the Cold Regions Research and Engineering Laboratory, Hanover, N.H., by which the books of special interest to CRREL are mailed straight to the Cold Regions Project in the Library for processing, and then to the CRREL library.

In the Slavic countries other than Russia, publications are ordered from various institutions and dealers. Czechoslovakian publications are supplied on blanket-order from the Czech national library, the central State Library of the Czechoslovak Socialist Republic in Prague, with some additional items selected by the Library of Congress from the national bibliography.

There is a similar arrangement with Bulgaria with the national library there, the Cyril and Methodius Library in Sofia.

For Polish materials the selection is done at the Library of Congress. The material is purchased with PL-480 money through the official export agency, Ars Polona-Ruch, in Warsaw.

Yugoslavia is a special case because the Library of Congress has an office there, supported by PL-480 funds, which is responsible for selection and acquisition.

Publications are also obtained from a number of smaller private dealers in Canada and the USA. A few come from Germany.

The recommending officers' activity consists of scanning the records of new materials which come from four sources, and making recommendations for acquisition. These sources are:

1) The cards from Vsesoiuznaia Knizhnaia Palata (VKP) - Soviet catalog cards

2) "Knizhnaia letopis'" bibliographies

3) Lists from various exchange partners, and

4) Any other source (announcements, prospectuses, citations in journals, newspapers) from which we can get a bibliographical citation.

The Library of Congress receives about 45,000 Soviet catalog cards a year; those representing titles not already received through other channels are copied and sent to the recommending officers for recommendations.

The "Knizhnaia Letopis'" bibliographies supplement the Palata cards. They indicate the entry number of items for which cards will not be made. The Shared Cataloging Division in the Library makes copies of the entries of "letopis'" which will not appear in the "Palata" cards.

The exchange partners, sending lists of available books, are institutions like Akademiia Nauk. The Library also receives catalogs of used book dealers from many parts of the world.

Materials which the recommending officers believe may not come through the main sources are bought from used book dealers; their catalogs are checked, then searched, and the orders are placed.

The recommending officers exclude certain subject categories and types of books. Schoolbooks, for example, except for some texts at the university level, are excluded. Also excluded are books on clinical medicine and technical agriculture, because these are subject specialties of the National Library of Medicine and the National Agricultural Library. Medical and agricultural reference materials, however, are sometimes accepted.

According to our recommending officers, the Library receives over 5,000 Soviet serials and about 20,000 Soviet monographs a year. This amounts to approximately one third of the total monographic output of the Soviet Union. Of the 20,000 Soviet monographs, at least 200 are fully or partially pertinent to the Cold Regions Project.

New material is channeled to the Project through one of the following Library of Congresses divisions:

1. Order Division

2. Exchange and Gift Division, or

3. Shared Cataloging Division.

Russian, Czechoslovak, Bulgarian and Polish materials are received through the Order Division, while the Yugoslav publications, which are received and accessioned in the overseas office, go straight to the Shared Cataloging Division.

Most monographs, irregular series and some periodicals come through the Order Division. A special arrangement with the Order Division permits a member of the CRBP to check every book received through Kamkin's book store on the day of its arrival, before those approved for purchase are sent to a cataloging division. Books of interest to the Project are usually purchased.

In general most Slavic materials are dispersed throughout the general collections. However, current Slavic periodicals and some of the irregular series are kept in temporary custody in the Slavic and East European Division which makes the material very convenient for systematic searching. Of all the periodicals that seemed likely to contain pertinent material for the CRBP, 600 were found to publish at least one pertinent article a year. These are being scanned systematically. Out of these 600 publications, 557 are slavic originals and 43 are English translations.

Fig. 1 shows some statistical data on these periodicals.

Pertinent articles that occasionally appear in the periodicals not included in the systematic search are reached through various bibliographies and references, the main source being the Russian "Referativnyi Zhurnal".

The Shared Cataloging Division processes only monographs and monographs in series.

There is also an arrangement with the Shared Cataloging Division, which permits us to see the books and make selections for the Project at the first stage of cataloging.

Some books come through the third channel - the Exchange and Gift Division. The Library of Congress's major exchanges with the Soviet Union are priced exchanges on a page-for-page or dollar-for-dollar basis (13 out of a total of more than 80). Some publications are sent automatically, others are a result of a Library of Congress

request. This channel processes approximately 8,000 monographs a year and about 32,000 pieces of serial Russian material.

Similar exchange agreements exist with the other Slavic countries. The exchange partners are mostly scientific organizations, national libraries and universities.

The recommending officers of the Science and Technology Division, on whose advice some of the monographs and monographs in series are purchased, follow a written outline of the subjects of interest to the Cold Regions Project. Whenever there is a second copy of the pertinent book, they send it directly to the Project.

Taking all the circumstances into consideration, it is believed that of the Slavic material received by the Library of Congress that is relevant to the CRBP at least 95% is identified by the Project.

Slavic Serials Selected for Systematic Search and Routing

Total Serials (titles of Journals)	600
Slavic originals	557
English translations	43

Sponsors:

Academies of Science	50%
Universities	10%
Professional societies and organizations	40%

Distribution by Subjects

Scholary journals (general)	78	Petroleum industry	16
Geography	53	Patents and inventions	4
Geology	31	Chemistry	21
Biology	32	Engineering:	
Physics	72	civil & structural	80
Polar exploration	5	electrical	17
Forestry	4	mechanical	21
Soil science	23	Mining	20
Hydrology and meteorology	53	Oceanology	7
Military science	14	Transportation	36
		Naval science	15
			600

Fig. 1

THE COLD REGIONS BIBLIOGRAPHY PROJECT AT THE LIBRARY OF CONGRESS

G.T. Thuronyi

Delivered at the 2nd Colloquy on Northern Library Resources, Hanover, N.H., June 1, 1972

For over 20 years there has been in existence what may be the longest uninterrupted contractual arrangement between two U.S. Government agencies for the performance of a bibliographic service resulting in a continuing, published bibliography.

The need for this service arose with a group of research scientists in the Snow, Ice and Permafrost Research Establishment (SIPRE). If duplication of research effort was to be avoided, the investigator had to be familiar with previous research reported in the literature. But publications had so proliferated that an inordinate portion of the scientist's time was spent on collecting background information. It made sense, therefore, to turn to the documentalist, or information specialist as we call him today, who could take over the search for pertinent literature and organize and present it in a way readily accessible to the scientist.

The Library of Congress, with its vast collection of both domestic and foreign literature, was a natural choice for such a bibliographic service. Under the initial agreement, the Library of Congress undertook to search all available sources for literature pertinent to SIPRE's interest. Renewed year after year, the agreement is still in effect today, although now, instead of SIPRE, the contracting party is the Cold Regions Research and Engineering Laboratory (CRREL), which was formed by a merger of SIPRE and the Arctic Construction and Frost Effects Laboratory, both units of the U.S. Army Corps of Engineers.

The service performed under the agreement took the form of bibliographic citations to monographs, research reports, journal articles, and other material. The citations were printed on 3 x 5" cards, which also contained an abstract, index terms for author and subject indexes, and Universal Decimal Classification (UDC) numbers.

Periodically the cards were mounted in two columns and photographed in page format, for publication in bound volumes.

By the mid 1960's the Cold Regions Research and Engineering Laboratory found itself in need of re-evaluating its agreement with the Library of Congress. Since the original contract, some 20,000 citations and abstracts had been accumulated. But the annual rate of pertinent literature had increased tremendously. Salaries and other production costs had also increased. Funds were not available

to take care of this dual increase, and the project found itself in a financial squeeze. For a while a policy of selective and limited coverage was adopted. But the Laboratory's scientists found the bibliography less and less useful as they no longer felt that it gave them access to all important literature. In 1968 CRREL and the Library of Congress modified the agreement. Under the new contract the most time-consuming and costly element in the bibliographic procedure, namely the writing of abstracts, would be virtually eliminated, and UDC numbers, which were not used by CRREL scientists or in the CRREL Library, would be dropped. Furthermore, the 3 x 5" cards would no longer be produced. Instead, the citations and indexing elements would be entered into a computer record and the necessary programs would be developed to produce a monthly accession list and an annual bibliography by means of computer printout. Operating under this agreement, we have been able to triple, approximately, the number of citations per year and achieve satisfactory level of completeness of coverage.

Administratively the Cold Regions Bibliography Project is part of the Science and Technology Division in the Library's Reference Department. Other units of the Library involved in our activity are the Information Systems Office, which develops programs and performs computer runs, and the Photoduplication Service, which processes our microfiche. These are located in the Library's Administrative Department.

The subject coverage of the Bibliography on Cold Regions Science and Technology is coincident with the sponsoring agency's mission. This mission has been expanding over the years. Originally called the Bibliography on Snow, Ice and Permafrost and dealing principally with the physics and mechanics of snow, ice and frozen ground, the Bibliography on Cold Regions Science and Technology, as it is now called, still covers the same subjects, but has expanded into all aspects of cold regions engineering, such as road and building construction, earthwork, pipe laying, operation of vehicles, city planning, etc.

When a pertinent item, such as a book, research report, journal article, patent, or other document is identified, the bibliographer prepares a work sheet containing all elements of the bibliographic citation and indexing or retrieval terms required for the computer record. The Bibliography on Cold Regions Science and Technology is fully mechanized, which means that all items are stored in a permanent record and a number of programs are available to manipulate the record. In this mechanized system we recognize three functional stages: input, maintenance and output.

Input is the creation of a record of digitized bibliographic information and its storage in a data bank. The purpose is to capture permanently all potentially useful information pertaining

to a document. It is important at the input stage to differentiate between the various types of bibliographic elements. If, for example, one anticipates a requirement to produce an author index, one has to know, or rather the computer has to be told, how to find the authors. The easiest way to achieve this is to tag all authors right at the beginning--at the time of input. The same is true of other bibliographic elements, such as subject, journal, etc.

The Library of Congress has developed an input format for its machine-readable catalog, generally known as the MARC format. The Cold Regions Bibliography Project uses this format in a slightly modified form. Fig. 1 shows the tag structure of the input format and Fig. 2 is an example of an actual work sheet prepared in this format.

The input worksheet is given to a keyboard operator who enters the information through a Datel 3031 terminal into disk storage of the Library's IBM 370/155 computer, under control of the Administrative Terminal System.

The typewritten copy, or "hard copy", produced at the terminal is proofread by one of the Project's editors. Corrections are marked on the hard copy which is then returned to the keyboard operator. Fig. 3 is an example of a record on hard copy with corrections. The operator transfers items that need correcting from the permanent storage area of the disk to a temporary or "working storage" area. After the corrections have been made, the corrected items are put into permanent storage in place of the original items. A hard copy of the corrected items is produced for final proofing.

Once each week a batch of items is transferred from the disk storage area to a reel of magnetic tape. These items are then added to the master tape file of citations.

This concludes the input phase of operations. As we have seen, the bibliographic information is maintained in a highly structured form and kept ready for whatever output is desired. This does not mean that the records entered onto the tape can no longer be changed. The MARC system provides an easy way of making additions, deletions or changes, either of whole records or of individual fields or subfields within a record.

To make it easier to perform corrections, diagnostic printouts of each record are obtained. A sample printout is shown in Fig. 4.

On this printout each field is identified with a tag number; fields with the same tag number are automatically provided with a sequence number. For corrections the proper record or field is indicated, along with the command symbol C for change, A for add, D for delete and R for replace. Corrections are keyboarded as shown in Fig. 5.

Once created and properly maintained, the data file is available for whatever use we may want to make of it. We should bear in mind, however, that while the possible number of uses is virtually unlimited, the actual operations that can be performed depends on the programs that have been written to handle the data.

Typical output produced from the Cold Regions data on a routing or occasional basis include the following.

A monthly and annual accession list (Fig. 6)

Quarterly and annual author and subject indexes (Fig. 7)

A listing of journals (Fig. 8)

A retrieval of items pertinent to a specific sugject, such as pipelines

A retrieval of reports and miscellaneous papers authored by CRREL scientists, arranged by report number (Fig. 9)

The variety is considerable. But each different type of output must be carefully planned for and costs in programming effort and computer time must not be ignored.

Operations to be available in the near future include an on-line retrieval capability, and the ability to produce photocomposed copy on the Government Printing Office Linotron.

To conclude this description of the Bibliography on Cold Regions Science and Technology I have to mention that each document referenced in the bibliography, with certain exceptions, is photographed in its entirety with a Bell and Howell double-aperture variable-reduction step-and-repeat microfiche camera. Copies of the microfiches may be ordered through the Library's Photoduplication Service, and a subscription to all the fiche may be arranged. Naturally, such orders are limited to material not restricted by copyright. It should be remembered that the principal users of the Bibliography on Cold Regions Science and Technology are the scientists at this Laboratory. By making all documents available on microfiche we provide them not merely with bibliographic control of the literature but with ready access to the literature itself; in other words, with a total information system.

Beside the contractual arrangement with the Cold Regions Research and Engineering Laboratory, the Cold Regions Bibliography Project at the Library of Congress has a similar arrangement with the Office of Polar Programs of the National Science Foundation to produce the Antarctic Bibliography. This arrangement, which has been in effect since 1962, calls for the abstracting and indexing

of literature pertaining to the Antarctic. The coverage is multi-disciplinary and comprises 13 subject categories: A General, B Biological sciences, C Cartography, D Expeditions, E Geological sciences, F Ice and snow, G Logistics, equipment and supplies, H Medical sciences, I Meteorology, J Oceanography, K Atmospheric physics, L Terrestrial physics, and M Political geography.

Once located, pertinent items are abstracted and indexed by the bibliographer. The citations, index terms and abstracts are then typed on a 5 x 8" card.

These cards are photoreduced and printed in 3 x 5" format, as shown in Fig. 10. Twenty-five copies of each card are delivered to the Office of Polar Programs where a complete file is maintained by author, subject, geographic location and grantee. Copies are also mailed to some 160 recipients: libraries, research institutions or individuals. Finally the cards are filed by author, subject, geographic place and grantee for annual indexes. Whenever 2,000 abstracts have been completed, the 5 x 8" cards, this time with the margins cut off, are mounted on boards in two columns for the book-form bibliography. The material is arranged in the 13 subject categories. Fig. 11 is a sample page from the Antarctic Bibliography.

The indexes are typed from the files of 3 x 5" cards.

Figs. 12-15 are sample pages from the author, subject, geographic and grantee indexes.

As we have seen, the Antarctic Bibliography system as it now exists provides for a card service, a fully indexed bibliography published in book form, and availability of all original documents on microfiche.

I deliberately said "the Antarctic Bibliography system as it now exists". We are in the process of working out a mechanized system for the Antarctic Bibliography that will allow us to produce it by means of photocomposition. The present bibliographic format, and in particular the indexing method now used, will be retained.

To achieve this mechanized system, the Cold Regions Bibliography Project has been awarded a grant by the Office of Polar Programs, National Science Foundation to develop a Prototype Polar Bibliography System. The project summary for this effort, as formulated by the National Science Foundation and agreed to by the Library of Congress, reads, in part, as follows:

"Utilizing as a basis the CRREL (U.S. Army) and Antarctic (NSF) bibliographies, and considering similar bibliographies of other agencies and organizations, the Science and Technology Division staff of the Library of Congress will develop a prototype automated polar

LIBRARY OF CONGRESS
Science and Technology Division

Cold Regions Research and Engineering Laboratory Input Sheet

Bibliographer	as	Date 2-828-72

001	Accession Number
100#d	Shafer, B.A.#et al
700	Super, A.B.
245	INFRARED TEMPERATURE SENSING OF SNOW COVERED TERRAIN
504	Montana (State) University. Technical Report
250#b	Aug. 1971#AROD-7166.1-EN
300	95p.
035	AD-732 849
035	Contract No. DAHC04-67-C-0058
690	SNOW SURFACE TEMPERATURE
690	INFRARED MAPPING
690	REMOTE SENSING
652	THERMAL RADIATION
652	RADIOMETERS
740	Infrared temperature sensing of snow cover
501	Form b
502	Acq. h

008	Conf.	Lang.	Pub Key	Date Pub	Date Proc	Country	Type Con
	2.	eng 15.	20.m	7108 21.	22.	us 23.	26.

041	Language

83-52 (4/71)

Fig. 2

bibliography system. The indexing system will be based on that of the Antarctic Bibliography which, except for its hierarchical nature, is similar to that used in the Arctic Bibliography of the Arctic Institute of North America. The initial effort includes keyboarding of the citations and indices accumulated in the Antarctic Bibliography since 1962".

Incidentally, the modified MARC format that I described readily lends itself to any indexing or retrieval method.

To conclude, I would like to say a few words about cooperation. The very existence of this group and your presence here today suggests that we all agree on the desirability of working together. There is a staggering amount of material available. To collect, service, control, and disseminate it exceeds the technical and financial capabilities of any single organization. For many years, therefore, the avoidance of duplication has been recognized as necessary for the effective performance of our various efforts. But helping each other is not easy. Arrangements and adjustments that must be made are often more burdensome than a certain amount of duplication of effort. The particular interests and requirements of different groups may stand in the way of developing mutually satisfactory standards upon which cooperative arrangements can be based. Finally, and this I quote from a recent report of the National Academy of Sciences,* "Institutional inertia and competition are . . . very real, sometimes overriding factors in the design and transitional problems to be solved."

We have overcome some of our inertia by coming here. Now we have to make sure that our willingness is carried a step further.

Cooperation, of course, can assume different forms, depending on the nature of the cooperating agencies, on the areas of common interest and on the methods used.

In our own work we can cite several examples of successful cooperation. One example is the cooperation between ourselves and our project sponsors. And I am not thinking of the providing of funds alone. Mostly I am talking about actual participation of our sponsors in our day-to-day work, which provides us with continuous feedback and enhances the relevancy of our work to the user's interests. Another example of cooperation is that between our two bibliographies, the Antarctic Bibliography and the Bibliography on Cold Regions Science and Technology, which overlap in the field of Antarctic snow and ice. In the past, material for the two bibliographies has been processed in two separate loops. But with our plans of further mechanization, a single data bank for the two bibliographies is envisaged.

Still another form of mutual help is the numerous publications received from authors and publishers, and accession lists received from libraries.

*Libraries and Information Technology; a National Systems Challenge. Washington, D.C., National Academy of Sciences, 1972, p. 34.

A specific instance of useful exchange was the shipment of several thousand citations on cards from the Scott Polar Research Institute in Cambridge, England, which formed the basis for our retrospective publication Antarctic Bibliography 1951-1961.

These are encouraging examples of cooperation, but they are not the kind of comprehensive and effective programs that I personally, and presumably most of us, would wish to see develop. Perhaps such a program would be a clearinghouse of noncopyright arctic publications which would borrow copies of documents held by the participating institutions, produce microcopies and distribute these among all other participants. Or a central computer bank into which bibliographic information on magnetic tape would be fed by several agencies and which would distribute citations to subscribers on the basis of a "profile of interest". Or any number of bilateral agreements. Time has been set aside further along in this meeting for discussing such matters of possible cooperation. At this point I just want to state emphatically that the Cold Regions Bibliography Project in the Library of Congress is eager to consider any suggested cooperative agreement. There is more work around than we can handle. Let us find ways to solve our common problems and bring each other closer to achieving our individual goals.

Bibliographic Input Tag Structure

001 Accession Number

008 Fixed Fields (Date, place of publication, etc.)

Knowledge Numbers:

041 Language(s)
1 Indicator: Work is a translation

035 Originator's number

050 LC Call Number

080 Universal Decimal Classification Number

090 Local Classification Code

Main Entry

100 Personal Name

110 Corporate Name

111 Meeting or Conference

Supplied Title:

241 Foreign Title

Subject Title:

690 Thesaurus terms used for indexing and retrieval

651 Open terms used for indexing and retrieval

652 Thesaurus terms used for retrieval only

650 Open terms used for retrieval only

654 Geographic terms (three levels) used for indexing and retrieval

Added Entries: (other than subject)

700 Personal Name

710 Corporate Name

711 Meeting or Conference

740 Desired title for printing in the subject index

753 Author (main entry) affiliation

Title Paragraph:

245 English Title

250 Edition Statement

260 Imprint

300 Collation

350 Bibliographic Price

Series Statement:

490 Series untraced

Bibliographic Notes:

500 General Notes

501 Form of Work

502 Method of Acquisition

503 Article Title in Altered Form

504 Journal Title

520 Annotation or Abstract

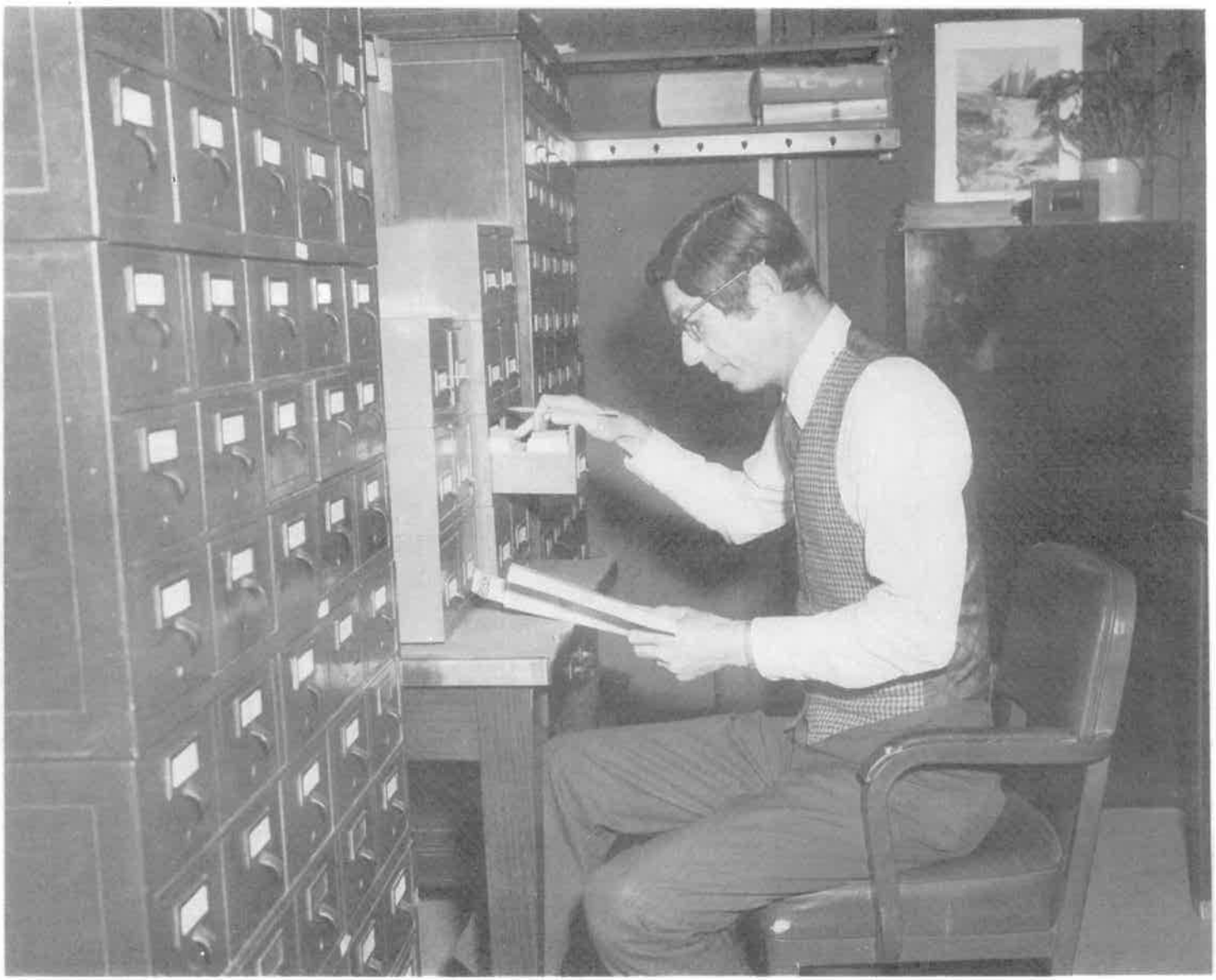
Additional Control:

660 CRREL Report Number

Fig. 1

Staff members of the Library of Congress prepare the continuing *Bibliography on Cold Regions* for publication by the Cold Regions Research and Engineering Laboratory of the U.S. Army's Corps of Engineers. The Library's worldwide acquisitions in many languages make it a rich resource for bibliographic research, and its unique collections of nearly 65 million items include a vast library of scientific and technical literature. Here Mrs. Natalie Voshinin, Technical Information Specialist in the Cold Regions Bibliography Section of the Library's Science and Technology Division, searches for pertinent periodicals in the Russian language among publications in languages of the Cyrillic alphabet.

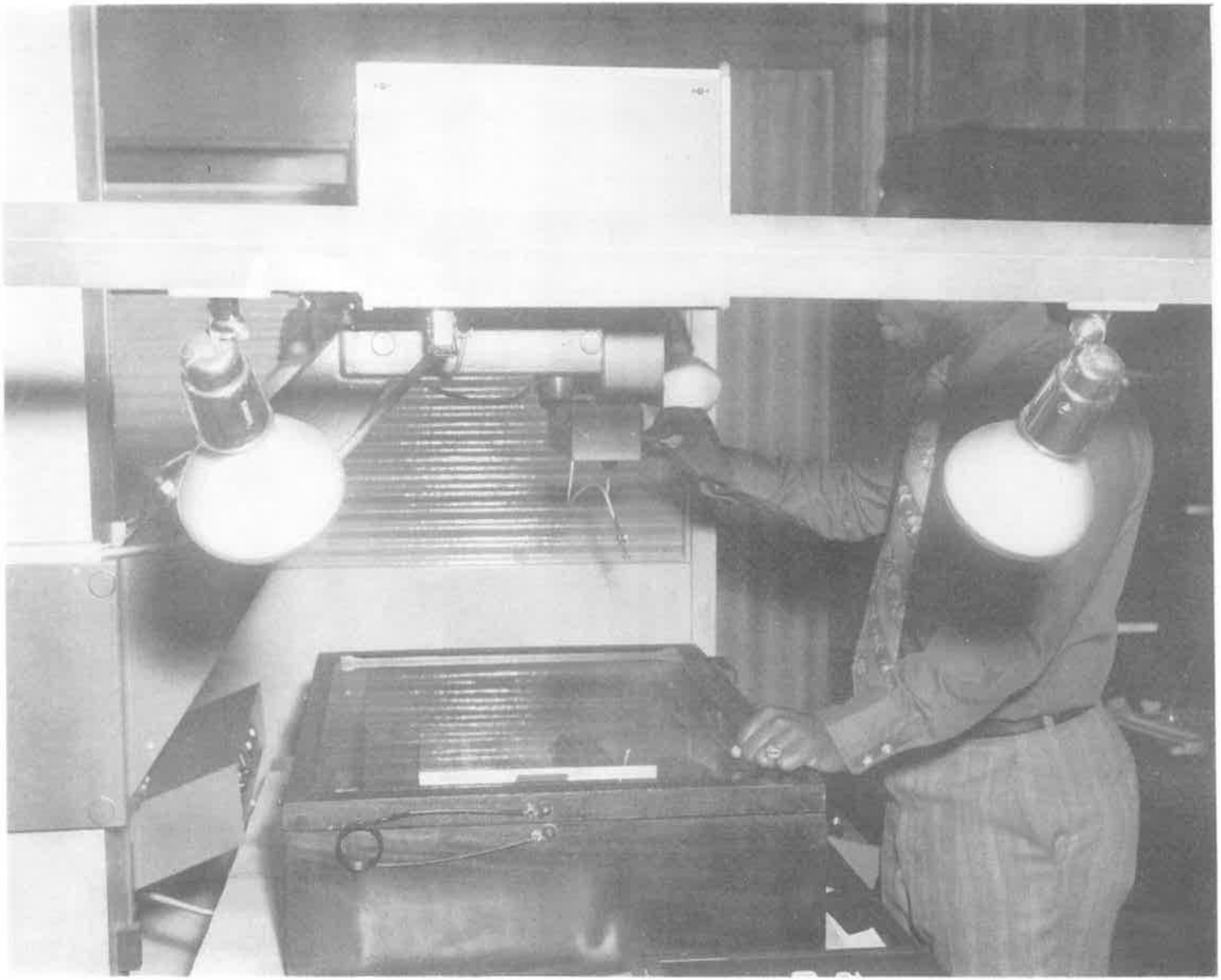
New issues of journals received in the Cold Regions Bibliography Section of the Library of Congress are recorded in this visible file by Odessa Swann, Library Technician.



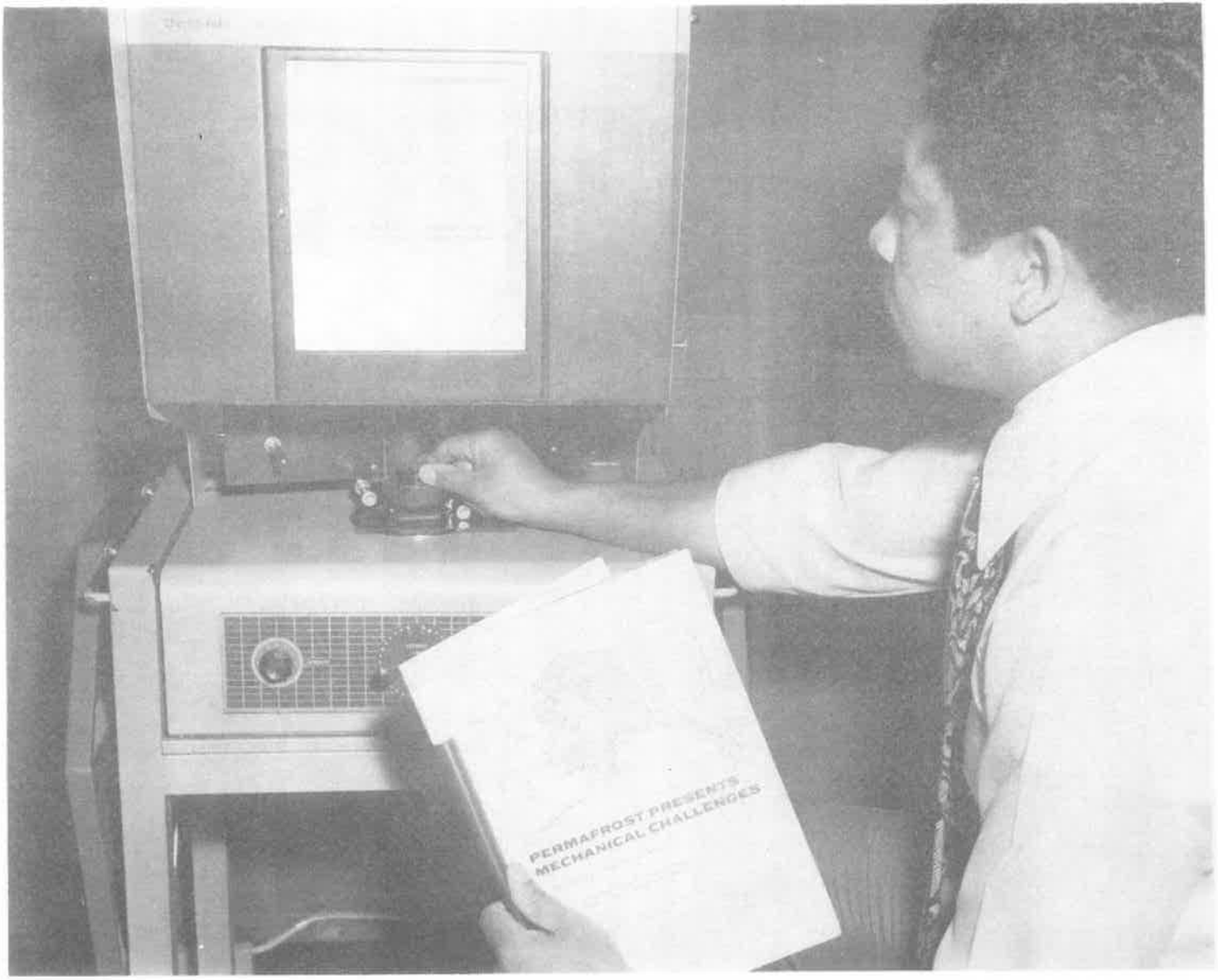
The Cold Regions Bibliography Section in the Library of Congress maintains an author file for all books and articles listed in its bibliography. Here Robert W. Moesker, Technical Information Specialist, checks a pertinent article for possible duplication.

The original typescript copy for the bibliography is retained for a time for editorial checking. Here Geza T. Thuronyi, Head of the Cold Regions Bibliography Section in the Library's Science and Technology Division, checks an item for future listing against the original typescript for an earlier issue for a discrepancy in transliteration.

The full text of each document cited in the bibliography is filmed on microfiche, but each fiche bears the appropriate title for its text in a strip at the top which is readable to the naked eye. Here a negative impression of titles of articles and/or books for this purpose is produced from a copying machine.



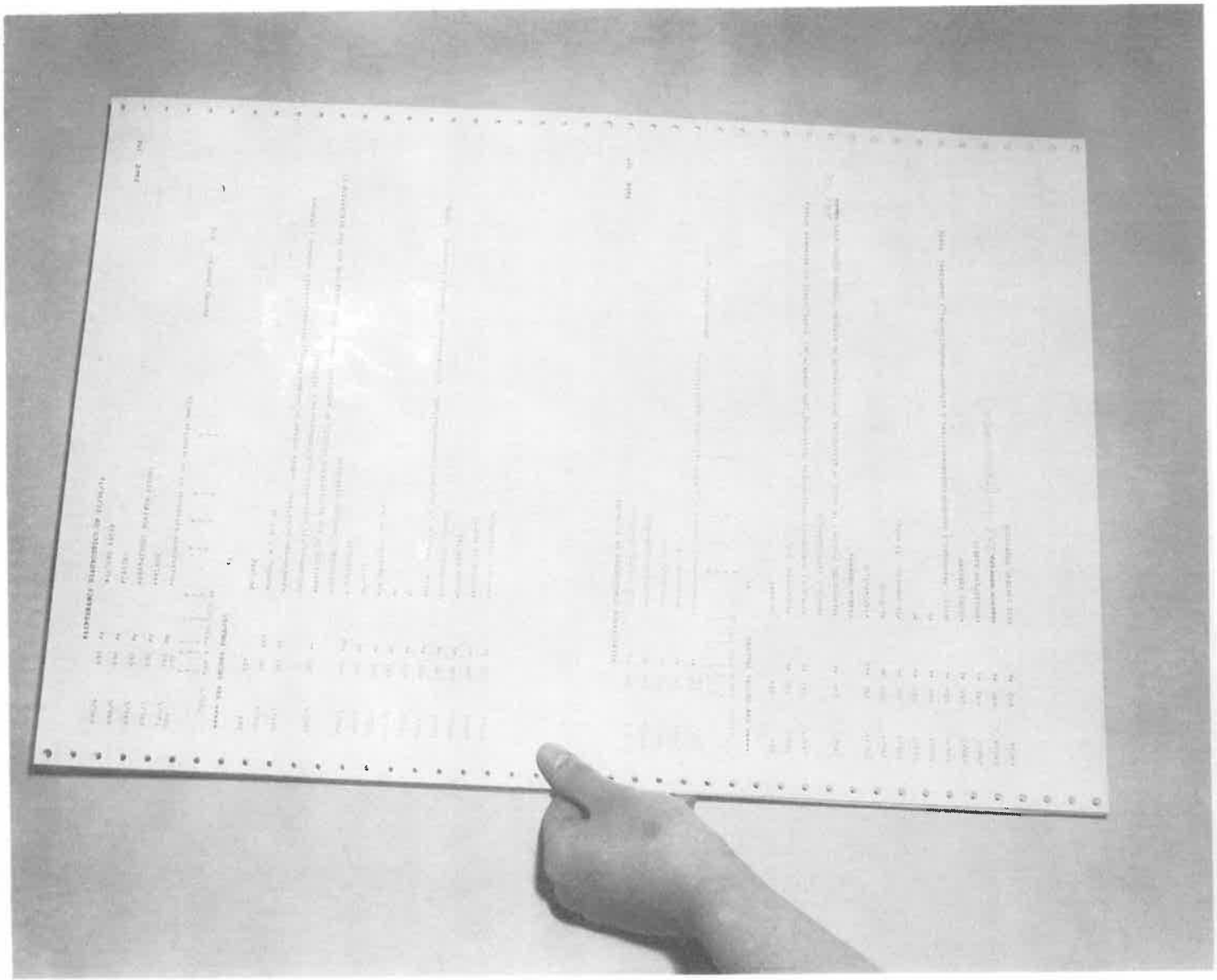
Walter Miller, Microfiche Camera Operator in the Cold Regions Bibliography Section, films the full texts of the documents cited on microfiche and uses a special camera to film the titles for the top strips on the fiches.



The completed microfiche copies of all documents are checked for quality on a microfiche reader by Calvin Clark, Library Technician in the Cold Regions Bibliography Section.

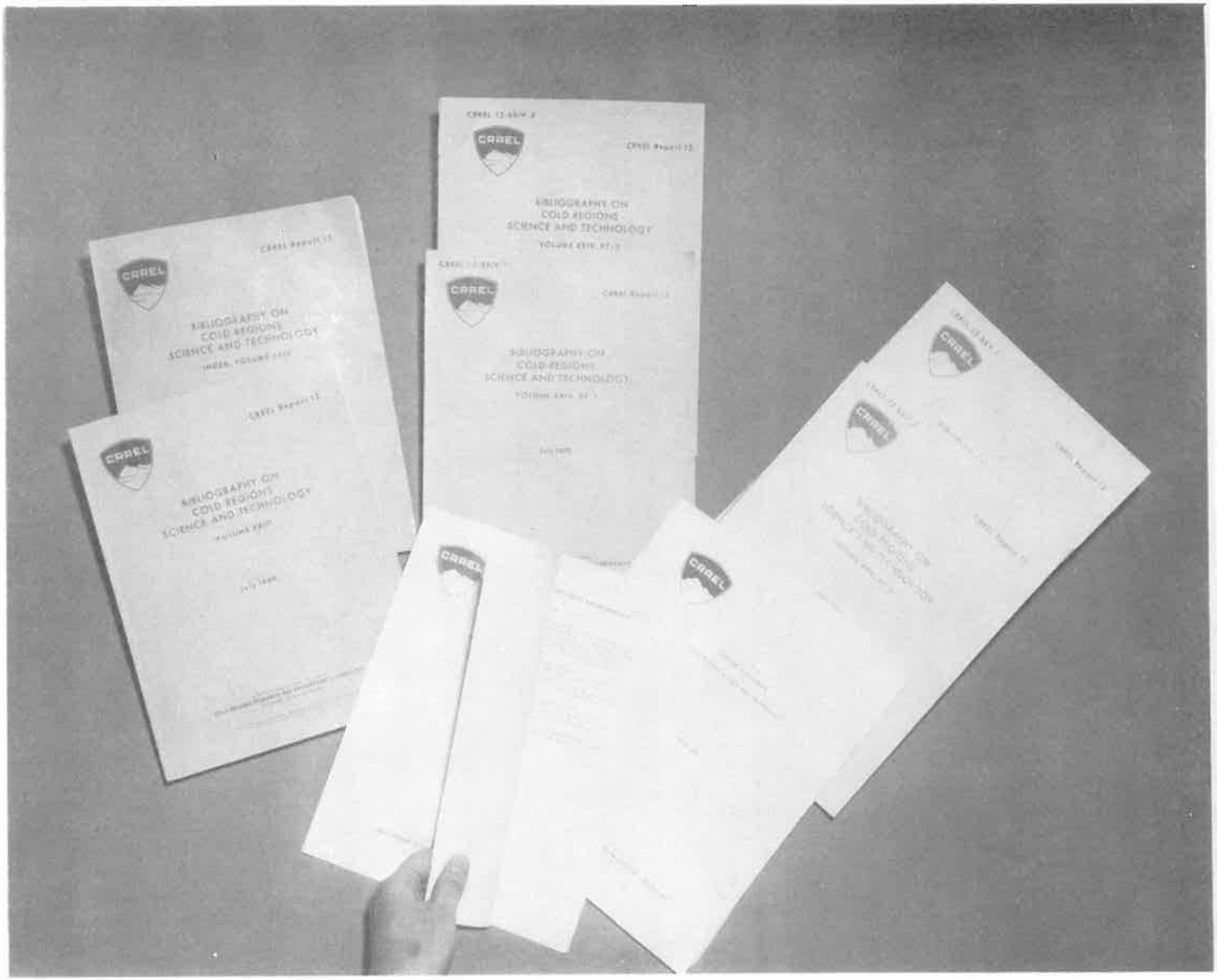
The bibliographic data for the monthly and annual issues of the *Bibliography on Cold Regions* is transmitted by Mrs. Betty Jones, Keyboard Operator, from a terminal in the Cold Regions Bibliography Section to the Library's Computer Center via a telephone hookup.

In the Library's Computer Center, the editorial copy for the *Bibliography on Cold Regions* can be printed out for editing and indexing purposes as well as for final editorial copy for publication. Here Myron Phillips, Computer Specialist for the Library's Science and Technology Division, checks on a problem in the printout.



This diagnostic printout is intended for use in editing and indexing by the staff of the Cold Regions Bibliography Section.

The monthly issues of the *Bibliography on Cold Regions* are cumulated annually, and each annual issue appears in two parts – the bibliography itself and the annual index. Discussing the updating of the project's list of indexing terms here are (left to right) Geza T. Thuronyi, Head of the Cold Regions Bibliography Section, and two Technical Information Specialists, Robert W. Moesker and Mrs. Natalie Voshinin.



In the immediate foreground are published copies of two monthly issues of the *Bibliography on Cold Regions*. Above them (from left to right) are the annual issues and their indexes for 1969, 1970, and 1971.

The "Northern Collection" of The Library of Congress

Robert W. Moesker

If there is one term that might be used to describe the collections of the Library of Congress, that term is DIVERSITY.

It is diverse from the viewpoint of subject matter--ranging from AACHEN to ZYMASE.

It is diverse from the viewpoint of space occupied--ranging from facilities located in the District of Columbia to nearby Maryland and Virginia and on out into Ohio - not to mention the various outposts overseas.

It is diverse from the viewpoint of languages--ranging from the familiar western European strains through Slavic and Oriental to the more exotic tongues of Africa and Indonesia.

It is diverse from the viewpoint of size--the last annual report of the Librarian (FY 70) showing 61,317,142 individual pieces in the collections and increasing at a rate of about 1.5 million pieces per year.[1]

To reduce this mass of subject matter, space, language, and size into some meaningful form appropriate to northern regions presented a real problem.

You can get some idea of the magnitude of this task if you consider that there are 8 major catalogs throughout L.C. containing nearly 49.5 million printed cards.[2] In addition to these major catalogs, there is a serials catalog containing about 60,000 titles.[3] There are also numerous auxiliary and special catalogs in the various divisions, plus microform collections of more than 1.5 million pieces.

We discussed several possible approaches to the reduction of the available materials to a manageable size. We rejected a subject approach as being too time consuming and too much like looking for a needle in a haystack. A geographic approach was likewise rejected as having too much possibility of missing many subjects dealing with the northern regions. Shelf reading was discounted as being too cumbersome--there are miles and miles of shelves in the combined stacks of L.C.

In the end we took our cue from the current political scene and decided to poll the catalog to determine the extent of the L.C. collections having pertinency to northern regions. The results of that poll are about to be revealed to you. As you listen to the results,

please bear in mind two things. (1) Although the poll sample, hopefully, reasonably represents the collection as a whole, we can consider the results to be only a first approximation of the L.C. holdings on northern regions. More detailed studies would be needed to get an accurate handle on these materials. (2) An assumption was made--in common with other types of polls--that the derived percentages from the survey sample apply with equal force to the rest of the collection. Within these limitations let us now consider the poll itself and the results.

Ground Rules:

1. No subject was excluded.

2. Although some languages were not included, none was intentionally excluded.

3. No published form was excluded - monographs, serials, mf, theses, symposia, manuscripts, rare books, technical reports, recordings, photographs, motion pictures - all were surveyed.

4. Without regard to the language of publication, any material by northern regions authors or in any way dealing with activities in northern regions was considered appropriate.

5. Northern regions were defined to include Alaska, Canada, Iceland, Greenland, Scandinavia (except Denmark), most of the USSR, Northern China, Japan and Korea, plus included or adjacent water bodies. Material published in Denmark or by Danish authors dealing with Greenland or other northern regions was considered appropriate. (For example, a Danish writer discussing economic conditions in Denmark was not considered appropriate; but a Danish writer discussing economic conditions in Sweden was considered appropriate.) Materials dealing with physical sciences in Alpine regions was also considered appropriate.

6. Excluded specifically were publications by governmental agencies.

Poll Sample

The official catalog at L.C. was used as the most representative catalog from which to select the poll sample. This catalog is not open to the public but is used exclusively by the staff in cataloging, searching, establishing authors, and in maintaining control of the collections. It is the authoritative catalog at L.C. and contains 17.34 million cards, about 85% of the total of all the cards in the 8 major catalogs. I must explain here an apparent discrepancy.

Obviously 17.34 million is not 85% of the 49.5 million printed cards mentioned previously. The difference comes about in this way. Included in the 49.5 million figure are the cards filed in the two major public catalogs, the main catalog with some 15 million cards and the Annex catalog containing about 14 million cards. These two catalogs are, in general, duplicates of each other and each is duplicated in the official catalog. So if we deduct these 29 million from the 49.5 million total we reach about 20 million different cards and of these 20 million 17.34 million are in the official catalog. This works out to about 85% of the different cards.

The sample was selected in this manner:

1. Two card drawers for each letter of the alphabet were selected at random with the exception of the letter "X", which has a total of only three drawers. The entire sample of the letter "X" was taken from one drawer.

2. A total of 400 cards from each letter were selected at random, 200 from each drawer. Each sample was measured at a rate of 200 cards per 1 1/2", the cards being standard 3 x 5 catalog cards and being firmly pressed together.

3. A fudge factor of 1/4" of additional cards was introduced to allow for the various "no count" cards, i.e., those establishing authors or institutions, cross-reference cards, and multiple imprints of the same work. In this regard, the multiple imprints of the same work appropriate to northern libraries were considered as a single work. Translations from or into a northern language were regarded as separate units.

4. Total sample size was 26 x 400 or 10,400 cards. This works out to be about 6 of each 10,000 cards in the entire official catalog ($10,400 \div 17,339,061 = .0006$ or 6×10^{-4} or .06%). The sample may seem numerically small, yet it is larger by several orders of magnitude than those upon which the various public opinion polls are based.

Results of the poll

1. The 10,400 cards polled yielded 204 items dealing with northern regions (.01961 or 1.9% or rounded off 2%). The letter M with 52 pertinent items was most productive while in both N and P the yield was zero. T and J produced 29 and 23 appropriate items respectively and U had 17. All others had 10 or less.

2. Among the 204 pertinent items, the languages represented, besides English, were Russian, Swedish, Norwegian, Icelandic, Japanese and Latvian. I am reasonably certain that there is additional material in other languages--Finnish, German, Chinese and Danish, for example--but they just didn't appear in the sample.

3. Thirty-six (36) different topics were noted, covering a broad range and including among others:

agriculture	trade unions	exploration
biology	law	psychometrics
birds	religions	mythology
nuclear physics	the physically handicapped	the Russo-Finnish war 1939-1940
submarine warfare		

Application of the poll results

1. Using some of the statistics previously noted and the assumption that the percentage of the items pertinent to northern regions applies equally to the full collection, we can make some generalizations regarding the rest of the L.C. collection and how much of it would apply to northern regions.

Earlier there was mention that there are 61,317,142 total pieces in the collection. Applying the 2% ratio we derive 1,226,742 pieces in the "northern collection". Part of this breaks down as follows:

Form	Total pieces L.C.[4]		"Northern Collection"
Volumes & pamphlets	15,258,327	)	305,166
Newspapers (bound vols. & m/film)	339,192	)	6,783
Manuscripts	29,936,636	)	598,732
Maps	3,315,210	) each	66,304
Motion pictures (reels)	121,789	) X 2%	2,435
Music (Vols. & pieces)	3,335,348	)	66,706
Prints/photographs	3,136,473	)	62,729
TOTAL	55,442,975	)	1,108,855
Technical reports (mf & hc)	1,038,296	)[5]	20,765

(not shown in annual report; reports collection is for Sci. Tech. Div. only).

Summary

So, there we have the results of the latest "Poll of the Library of Congress' Northern Collection"; the real job comes in

finding the pieces now that it has been reasonably established that they exist. At this point it becomes necessary to add another term to "diverse." which was used at the outset to describe L.C. The additional term is "disperse". Now combining them we arrive at

DIVERSE DISPERSION OR DISPERSED DIVERSITY

and that could well be the subject of a whole new study. Suffice it to say that the "Northern Collection" at L.C. is scattered among 8 different locations and several dozen decks, which makes for a retrieval problem of no mean proportion.

One final remark concerning the catalog survey:

In taking a small slice of the general population, public opinion polls seek to achieve a representative cross-section of economic, cultural, social, ethnic, and educational backgrounds among the various age groups and sexes. In a similar manner we have sought here to achieve a cross-sectional sample of the L.C. collection and to evaluate it with respect to its applicability to northern regions. By using the official catalog, by including a variety of languages, subjects, and geographic areas, and by polling the entire alphabet, we have come up with a sample that I believe is reasonably representative of the entire catalog and thus the collection.

Whether the sample is in fact representative will have to await verification by a more detailed study, should it take place.

References

1. U.S. Library of Congress. Annual report of the Librarian of Congress for the fiscal year ending June 30, 1970, p. 105

2. ibid., p. 110

3. ibid., p. 50

4. ibid., p. 105

5. U.S. Library of Congress. Science and Technology Division. Technical Reports Collection. [Report], 31 March 1972, 1p.

NORTHERN LIBRARIES

Nita Cook, Librarian
(Mrs. G.A. Cook)

Boreal Institute for Northern Studies
The University of Alberta, Edmonton, Canada

"Northern titles" grew out of the Librarian's need for current leads to the literature on the North (and to some on the Antarctic), especially to the journals received by the Library. CRREL's monthly Current Literature has no index until the annual cumulation, and doesn't cover all aspects of northern literature. Scott Polar Research Institute's "Recent Polar Literature", published in each issue of Polar Record, is one to two years behind, and is unindexed. Arctic Bibliography is even further behind. Being familiar with "Chemical titles" (American Chemistry Society), and having access to a computer and to information retrieval oriented computer programmers, the Librarian produces a monthly KWIC index: a KWIC permutation of authors and titles of English language articles in journals received by Boreal Institute each month. Foreign language articles are included only if they have good English summaries. Not every article in every journal is included; selection is on the basis of polar content. Government documents and other serial publications are now being included.

At present, there is a 63-column limitation for titles ("a", "and", "the", and other non-informative words are edited out). The Program also demands an author: for an article with no author citation, an author's name is coined, usually a corruption of the Journal title. Citation for an article is coded into 10 columns, usually 4 letters and 6 digits. As ASTM's CODEN does not include many of the journals involved, the Librarian has devised her own CODEN, usually using the capital letters. The index is non-cumulative month-by-month, but is cumulated annually. The aim is to have the preceding month's literature coded, key-punched and KWICed by the 15th of a month.

Tentative plans are to market it, by exchange or subscription in 1973, possibly at $30.00 per year.

LIST OF ATTENDEES

2nd Colloquy on Northern Library Resources

Mrs. Martha Andrews
Institute of Arctic & Alpine Research
University of Colorado
Boulder, CO 80302

Mrs. Elizabeth Colyer
Aeronautical & Mechanical Engineering Branch Library
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Mrs. G. A. Cook
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Mrs. June Currie
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Miss Suzanne DeCaue
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Miss louise Dion
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Mrs. Margaret L. Gardner
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Mr. Garth Graham
Director, Library Services Branch
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Mrs. Kirsten Luckhurst
Marine Sciences Centre Library
Strathcoma Hall
McGill University

Mr. Paul H. McCarthy
University Archives & Manuscripts Collection
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College, AK 99701

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Northern Region Library
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(Representing AIDJEX Project, NSF)

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Dartmouth College Libraries
Hanover, NH 03755

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Elmer E. Rasmussen Library
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College, AK 99701

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