

Commentary

ARCTIC BIBLIOGRAPHY

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RESearch at some stage involves recourse to the literature. Literature records are usually organized according to disciplines or subjects. Research interests that cut across subject lines, as do area studies, require an independent control of the literature. Thus the Arctic and Subarctic, though unique by nature, present by reason of their extent and diversity unusual problems in the organization and control of literature. An attempt to solve these problems is being made by the Arctic Institute of North America in its "Arctic Bibliography." The history and purpose of this project, its financing, staffing, procedures with their inherent difficulties, and results are outlined below, together with some byproducts of the main effort.

Research and planning in their arctic phases during World War II were constantly hampered by dearth of information, lack of ready access to it, and at times by uncertainty as to whether data required were obscurely recorded or non-existent. Most of the founders of the Arctic Institute had been in such predicament during their war service and one of the first efforts of the Institute was to provide a key to the existing literature covering its area of interest. Groundwork and financing of the project took a year's time. Its directors were drawn from the scientific community, armed services, and library world, as well as the Institute itself. Project personnel began compilation in the summer 1947; "Arctic Bibliography" began publication with three volumes in 1953, and continues to the present, volume 11 being in press and 12 in compilation. The series is designed as a permanent reference work, especially for use in research remote from the great libraries and special information centres. The early volumes are retrospective; the later ones are current and appear at about yearly intervals for use when the high-frequency listings in card or throw-away form from a variety of sources have served the immediate need and are falling into desuetude. The volumes have low maintenance cost, mere shelf room; they are easy to use, very handy for the individual scientist; and the nominal price per volume from the U.S. Government Printing Office puts them within the reach of all.

Type-set, buckram-bound volumes of fourteen to sixteen hundred pages are costly to produce however. These represent an outlay of forty-odd thousand dollars for the printing, binding, etc. and eighty-odd thousand for the compilation, the latter about twice now what it was in the late 1940's. The "AB" project is administered by the Arctic Institute. The U.S. Office of Naval Research, the U.S. Army and Air Force have shared in providing funds. The National Research Council of Canada also made several con-

tributions. The National Science Foundation, the National Institutes of Health and the Atomic Energy Commission advanced funds, and the last two continue to do so. The Canadian Defence Research Board makes a welcome yearly grant, and there is hope that other organizations in Canada will follow suit. Contributions of services and materials also would be welcomed from institutions in Canada or other countries with northern interest. Some private organizations, as the National Geographic Society, have supplied funds. We hope others with research and development interests in the North will do so, not only for present purposes, but for orientation on a circumpolar scale of a new generation of scientists and technicians. A key factor in providing more and better trained personnel is a broad command of the literature. In research planning it enables building upon, rather than repeating, work done and it saves literally man-years of effort. Despite the high cost of bibliography as a permanent research tool, its economy is so evident that quality, coverage, and timeliness, are more important criteria than price.

A paradox of this project is that the greater the efficacy of the "AB" in certain respects, the less efficient the staffing. The subject expertise, language competence and their combinations required are numerous, and we are ever increasing our research personnel, though it never suffices the needs. As corollary, the editorial and clerical staff remains at a minimum, and some of its tasks are shared among research personnel in a higher salary bracket. In the present 13-man staff, ten are research analysts, four of them part time; they command the main subject fields of polar work, except botany in which we must pinch-hit for the time being. Five command Russian, our largest language field, four the Scandinavian languages; one or two know any other language we need, except Finnish. The three-man processing unit consists of a typist of court-reporter calibre, a multi-lingual reviser and proof-reader, and the director who wears also the editor's hat. Editing involves rewriting work of some men whose assets are other than English language or abstracting technique, normally about 30 per cent; it involves also for some sciences an interlingual correlation of terminology; and the success of that phase depends upon the rapport among this small group of colleagues. The majority have some common background in a broad European education, and professional experience. Personnel require about 2 years on the staff for full orientation. Production norms for a six- to seven-thousand-item volume a year are a hundred abstracts a month from a full-time oriented research analyst; eight hundred items a month from editor and typist; proof-reading represents about one man-year's work shared among four. Addition of a cataloguer, and an editor per se would enable more productive use of all staff time and skills.

Occupational hazards exist for this as for other polar work-parties. The worst is the predatory personnel officer usually from some U.S. Government agency, which offers benefits that the Arctic Institute cannot provide, though salaries themselves are kept at the government level. Such raids upon our small group of specialists, with our skin-tight budget cause serious economic

loss and a crippling effect on the volume in process. Unfortunately these predators seem ineradicable. They represent a shortsighted policy in an agency promoting polar work. Some protection derives from our employment of non-citizens, over-age scientists, and residents of bibliographically favourable places other than Washington: the Boston-Cambridge area, New York, Ottawa-Montreal, Cambridge in England. Specific tasks have been carried out for this project also in Paris and Oslo. Though difficult to arrange and maintain with administrative time in short supply, the part-time services of "outlier" personnel are advantageous; they multiply the possibilities of access to materials difficult to obtain in Washington, and enterprising searchers bring to light unusual materials and some that are new to this country. Cooperative abstracting programs are being developed in some other bibliographic projects of international interest and limited budgets. Perhaps the "Arctic Bibliography" also could find help in abstracting from institutions abroad that would like to further our work but cannot supply funds.

The main searches are carried out in the Library of Congress and a dozen specialized libraries in Washington. Each research analyst plans his own work within assigned field(s), following established procedures of search, cataloguing, abstracting, and indexing, as well as practices designed to prevent duplication of work in overlapping fields, and to enable transfer of work pertinent to other specialists. Incoming materials of other significant libraries are kept under scrutiny by scanning of accessions lists, etc. This broad pattern of search and deployment of research staff achieves the wide coverage required for the arctic area. The materials are thus mostly in public collections, 95 per cent in journals of which about 1500 are searched regularly. Delay in access due to public use, binding routines, etc. is frequent and wasteful of time. A few organizations and scientists regularly provide the project with their current publications and it would expedite abstracting if more were doing so. Except for certain basic journals however, the literature is widely scattered on account of the diversity of work done in the Arctic. About 70 per cent of the literature originates outside North America. In general, Scandinavian and Finnish materials tend to be indifferently maintained in libraries, and Russian materials tend to be uncertain in export. Though improvement has been remarkable in recent years for both, there remains a time lag, due to delayed access, not only with much foreign, but also some native material. In a year's abstracting, about 55-60 per cent is of current publications, 35-40 per cent represents a year or more lag, and about 5 per cent older materials not hitherto abstracted for the "AB." The first group we expect to increase, and the last to remain steady. The classics of exploration were analyzed mostly in the early volumes of the "Arctic Bibliography." The later volumes increasingly represent geophysical research, resource development and environmental adaptation; contemporary activities in geology, meteorology, and engineering; in oceanography, fisheries, forestry; power development; conservation; public health and sanitation; education and welfare, etc. In the early volumes English-language

publications predominate, about 30 per cent are in Russian and 30 per cent in other European languages. Lately more western and northern European work is published in English; Russian publications are increasing numerically and represent about 46 per cent of a recent volume of "AB," English 38, and other languages 16 per cent. Besides the field studies, certain laboratory or other research is relevant to arctic conditions, for example: food packaging, sea-food (clam) poisoning, fabric testing, vehicle performance, low temperature effects. Increasingly represented also are studies on techniques of travel, transport, construction, etc. on establishing community facilities and new modes of livelihood for natives of northern regions. Alaska, Canada, Greenland, the countries of Fennoscandia, the Soviet Union in Europe and Asia, are all concerned in these matters. Their common and diverse aspects, similar and different treatment, specific phases or stages in the various areas are juxtaposed in the "AB."

These volumes serve many purposes besides those of the arctic specialist. The beginning investigator finds in them an easy way of introduction into a new field, and the advanced one finds handy reference to subjects tangential to, or removed from his own area of activity. Business firms and industrial enterprises who do not have research departments (which probably means the majority of them) can easily find through the index information needed *ad hoc* or for an extended survey. "AB" has a key role in the establishment of educational or research institutions in the North. At the Anchorage Health Research Center of the U.S. Public Health Service, for example, the library was assembled in large part through its use, and the papers hard to obtain or out of print were easily located and photocopied. For institutions not in the North, nor in arctic work, e.g., the Dairying Research Institute at Reading, England, "AB" presents special aspects of problems studied in another context. For a construction company in Winnipeg, it provides information on the environment and terrain of the remote site of operations; on access, transportation and labour, on construction materials and their behaviour at low temperatures; and on experience under similar conditions in Scandinavia, the Soviet Union and Alaska with building bridges, roads, dams, landing strips, sewage lines, fish-processing plants, apartment houses, power stations, and so on. In a broader view, however, these volumes, year by year, not only record results and indicate directions of research, but disclose something of its organization as well. In Russian materials especially is this so. The role of the research institutions and their complex network from centre to periphery of the Soviet Union are recognized in our process of identifying and evaluating the materials. Four years ago Dr. Vlas Stanka of our staff prepared a survey "Institutions of the U.S.S.R. active in arctic research and development", which was soon out of print. A new enlarged edition with information on 756 such institutions, their interrelationships, function in Soviet achievement, and status in the current decentralization program, is being published by the Arctic Institute in Dec. 1962. A companion work, "Chronology of Soviet work in the Arctic," also by Dr. Stanka will be published by the Arctic Institute early in 1963.