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COMPUTER-BASED STORAGE AND RETRIEVAL
OF GEOSCIENCE INFORMATION:
BIBLIOGRAPHY 1946-69

J. HRUŠKA and C. F. BURK, Jr.



Published by the Geological Survey of Canada as GSC Paper 71-40
Department of Energy, Mines and Resources, Ottawa



G E O L O G I C A L S U R V E Y
O F C A N A D A

PAPER 71-40

C A N A D I A N C E N T R E F O R G E O S C I E N C E D A T A

COMPUTER-BASED STORAGE AND RETRIEVAL
OF GEOSCIENCE INFORMATION: BIBLIOGRAPHY 1946-69

J. Hruška
C.F. Burk, Jr.

Prepared for
International Union of Geological Sciences
COGEO DATA, S.C. Robinson, Chairman
Committee on Geological Documentation, L. Delbos, Chairman

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Price: \$1.50

Catalogue No. M44-71-40

Price subject to change without notice

Information Canada
Ottawa
1971

PREFACE

The Committee on Storage, Automatic Processing and Retrieval of Geological Data (COGEODATA) was established by the International Union of Geological Sciences in 1967. Among its tasks is the compilation and dissemination of world-wide information in this field in order to make results known to all interested countries and organizations and to facilitate direct communication between the scientists concerned. This bibliography, the second compiled for COGEODATA, is a contribution that will help achieve such international collaboration. The existence of at least 336 papers and abstracts dealing with computer-based storage and retrieval of geoscience information that were published to the end of 1969 is eloquent evidence of the need for such a bibliography.

COGEODATA has been pleased to cooperate with its sister I.U.G.S. Committee on Geological Documentation, chaired by Dr. L. Delbos, by expanding the scope of the bibliography to include reference to computer applications in the field of documentation. In view of the natural continuum that exists between geoscience "data" and "documentation", and the emerging technology able to cope equally with both aspects, this consolidation should benefit workers in both fields.

It is a pleasure to record the debt owed to the compilers of this bibliography, Drs. J. Hruska, Geofond Praha, and C.F. Burk, Jr., Canadian Centre for Geoscience Data, for this comprehensive review and to the Canadian Centre for Geoscience Data and the Geological Survey of Canada for their offer to publish it.

S.C. Robinson,
Chairman, COGEODATA.

Ottawa, March 12, 1971

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INTRODUCTION

The application of computer technology to storage and retrieval of geoscience data has increased markedly since about 1966, and has resulted in the publication of numerous papers describing various aspects of this work. Unfortunately, these are widely dispersed in the literature, many in relatively obscure journals, proceedings and other sources. In order to make more effective use of this reservoir of experience, techniques and applications, we were requested by the I.U.G.S. Committee on Storage, Automatic Processing and Retrieval of Geologic Data (COGEODATA) through its Chairman, Dr. S.C. Robinson, to compile an international bibliography on this topic. The scope originally was limited to papers dealing with geological *data* (i.e. observations and measurements), but later the I.U.G.S. Committee on Geological Documentation under its Chairman, Dr. L. Delbos, requested that coverage be expanded to include applications in documentation (e.g. bibliographies, abstracts, indexes). The resulting bibliography presented here therefore attempts to include papers dealing with *all* aspects of geoscience information.

A measure of both the growth of this activity and the obscurity of publications describing it may be obtained by comparing the 52 references cited in a preliminary bibliography published by one of us (149) in 1968, and the 336 references reported herein. Although we made a diligent effort between May 1969 and November 1970 to find all known references, some have been missed. We would be grateful to receive information from readers on any omissions which could then be reported in later editions.

Scope of Bibliography - Our objective has been to cite all papers published or made available to the end of 1969 that deal with one or both of the following:

1. Use of computers and/or computer-readable records for the storage and retrieval of geoscience information, including data, bibliographies, abstracts, indexes, text, and graphical representations.
2. Techniques, codes, thesauri, studies, or other aids of *direct* assistance to the above.

The scope of "geoscience" as used here is essentially limited to the solid-earth sciences. Some papers are included which deal with some sectors of the hydrosphere (e.g. hydrology, physical oceanography), but we have not attempted to be comprehensive with respect to the earth's liquid and gaseous components. A more explicit definition of subject-matter scope may be obtained by examining the "Geoscience Discipline and/or Topic" index that follows.

Readers are cautioned that the bibliography *does not* include such other computer-oriented applications as data analysis, mathematical geology, statistics or simulation. It also excludes non-computer-oriented, mechanized systems such as edge-punched and optical coincidence cards. For the pre-computer era (effectively pre-1960 for most geoscientists), we have attempted to include all papers describing use of the now-standard 80-column punched

card. The distinction of authoring the earliest such paper identified by our survey rests with Margaret A. Parker for here 1946 paper "Use of International Business Machine technique in tabulating drilling data" (248).

How to use the Bibliography - In order to identify specific papers of interest, the reader should examine one or more of the six indexes that precede the bibliography, which itself is presented in alphabetic order by author. The reference numbers appearing in the six indexes identify the papers listed in the bibliography. Simple coordinate searches are thus possible which could identify, for example, papers dealing with codes used in the field of mineralogy, those published in a particular country on hydrogeology, or those published by a certain author or organization on bibliographic files.

Due to practical difficulties of distance and geography, the indexing of this bibliography was done alone by one of us (C.F. Burk, Jr.), who bears the entire responsibility for this work. An unfortunate consequence is that some papers from eastern Europe, including U.S.S.R., were not in fact available for indexing, and others could not be indexed because of language barriers. Regretfully, therefore, some papers have had to be indexed as "unknown" with respect to Information Aspect and Organization, and are not included under Geoscience Discipline or System Name, where applicable.

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