COMPUTER - BASED BIBLIOGRAPHIC DATABASES IN INFORMATION RETRIEVAL

A TREND REPORT 1982—1986

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CERTIFICATE

I hereby certify that the dissertation entitled "**Computer-based bibliographic databases in information retrieval: A trend report 1982-'86**" presented by Smt. Mercy Jose (Reg. No.5) in partial fulfilment of the requirements of the Master of Library and Information Science Degree Course 1988-'89, is an original work carried out by her under my guidance.

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Chapter I

INTRODUCTION

The survival of a species is dependent upon its ability to communicate and human race has passed through verbal and written communication, and finally to publication as a means of preserving the information that guarantees the survival and growth of civilization. In early days, library was considered only as a storehouse of information and the stocked documents were not allowed to be used . As times changed, the concept of library changed from storing function to utilizing and this lead to a great change to the understanding, and a need was felt for the right information to the right user at the time with precision. Database is a gift of information technology for information storage and retrieval.

Factors like 'Information explosion' or 'Information deluge', owing to the exponential growth of literature, development of new disciplines, increase in the number of users and their diversified requirements, inter and multidisciplinary nature of research, created problems to information managers who organise and disseminate information. To overcome these problems information managers began to use mechanical gadgets like computer for the storage and retrieval of information and also for housekeeping operations. Also, computers helped to generate a new link among people across a campus, a city, a region, a country or even the world allowing them to share this

knowledge. In short, computers helped to overcome space and time with regard to the dissemination of information.

Information technology has changed significantly in the last twenty years. The word of mouth got changed to print media and then to Electronic media. The merger of communication and computer technologies has given an impetus to an entirely new thinking in organising, structuring, transmitting, manipulating and messaging information to derive a variety of outputs. No other technology in the last 300 years has had as deep an impact as the information technology. It will have impact on our home, office, libraries and science and technology activities and so on. The information revolution and the availability of low-priced microcomputers have encouraged a large number of libraries in the developing nations also to participate in the automation of library and information services. Advancements in computing and communication technologies have made in roads into the libraries and information centres as well, and the major thrust of their activity now is to meet the challenge of providing right information at the right time to the user by making the right combination of information technology.

Efficient storage and retrieval of reliable information are of crucial importance in all fields of knowledge. The development of machine-readable databases has revolutionised the process of information retrieval. The possibility of ready access to information from a single computer terminal stimulated the imagination of research workers in the early seventies. It was this goal and fascination of interaction between man and machine, that have inspired

the major changes taken place in information retrieval. Of special value has been the development of bibliographic/electronic databases accessible for on-line searches. The database concept of computers in the initial stages helped to control documents within the wall of the library. The flexibility and dynamic quality of database also served the traditional bookshelf requirement. The institution which developed databases for their internal use gradually turned to networking with other institutions.

Databases and their use gradually turned to networking with other databases for mutual benefit, as it was not possible to any library to be self sufficient and some of these procedures put their databases for commercial exploitation. The concept of database vendors who leased out their computer for users for a fee also merged along this time in the 1980s. All these lead to an interest to take stock of the situation in this area of specialisation in the field of study. By considering all these factors, the investigator believes that it is worth to prepare status report on 'Computer-based bibliographic databses in information retrieval', to reveal the growth, development and trend in the past, present and near future in the field of investigation during 1982-1986.

1.1 The Title

The title of the study is "Computer-based Bibliographic Databases in Information Retrieval: A trend Report 1982-1986".

1.2 Definition of the Keyterms

The meaning of the terms used in the title are given by the following definitions:

Computer and Computer-based:

Computer is an electronic machine which can accepts data, store it, manipulate it as instructed in a program, retrieve it and convey the results to the user.[1]

Computer-based is that which is dependent to a significant extent upon computerprocessing.

Bibliographic Database:

Bibliographic Database is a database containing records made up of bibliograhpic information and designed to identify and locate relevant items.[2]

Information Retrieval

Finding documents or information contained in documents in a library or other collection, selectively recalling recorded information.[3]

According to Lancaster, Information Retrieval is the activities involved in searching a body of literature in order to find items that deal with a particular subject area.[4]

Trend Report:

A documentation list by which a documentalist is able to veiw the subject, in the proper perspective of the developments of the subjects in the past, present and near future, is called a Trend Report.

1.3 Objectives:

The main objective of the study is to find out the trends in the field of computer-based Bibliographic Databases in information retrieval. More specifically the study aims at the following:

i) to examine the past, the present and the anticipated near future developments in the field of computer-based bibliographic databases in information retrieval;

ii) to identify the areas in which the developments are very fast, and the areas in which the developments are comparatively slow;

iii) to identify the sources of information (microdocuments) available in the field of study; and

iv) to understand the trend in the use of various bibliographic databases in computer-based information storage and retrieval.

1.4 Implications and Use

The study is aimed to serve the following:

i) to use this study as a reference tool by the research scholars, students and information managers in the field;

ii) as a helpful fool for the compilation of bibliography in the field;

iii) as a helpful tool for the compilation of documentation list;

iv) to enable the specialist in the area to become familiar with developments in the field so as to cope with it;

v) to use this study as an important tool for classificationists who design depth schedules in the subject; and

vi) to attract the attention of Library and Information Scientists towards this fast developing area.

1.5 Methodology:

The methodology applied in this study for data collection, is Literature Survey. For this, primary journals in the field of Library and Information Science published during 1982-1986 were examined and articles selected. The selected articles were indexed and informative abstracts prepared on 12 x 15 cm cards.

Secondary journals, such as Library and Information Science Abstracts and Indian Library Science Abstracts were also used whenever, primary journals were not available for data collection. The collected data was classified on the basis of divisions followed in the LISA with modifications and subjected for systematic and scientific study so as to understand the various trends in the field of study.

1.6 Limitations:

The study is limited to microdocuments published in English alone. The investigator has been forced to collect data from secondary periodicals due to the non-availability of certain primary journals. The study also covers only a period of five years (1982-1986) owing to the lack of time and non-availability of materials to do a more exhaustive study.

1.7 The Dissertation:

The study has been organised into the following chapters:

Chapter I Introduction

In this chapter, the problem studied is stated with all its background. Key terms are defined. The objectives, implications

and uses, methodology and limitations of the study are explained.

Chapter II Bibliographic databases: Genesis, Development and Dimension

This chapter discusses the origin, development and the major facets of the subject under investigation.

Chatper III Bibliographic *databases in information services:* International and National Scenario

This chapter gives an account of databases producing agencies, database vendors and their information products and services along with the cost and trend in the growth of database at International and National level.

Chapter IV Literature on Computer based Bibliographic Databases: A Statistical Analysis

A Statistical study of the literature on the field of study is examined.

Chapter V *Computer-based Bibliographic Databases in Information* Retrieval: The Trend Report

In this chapter, the scientific and systematic study of the collected data is provided as part of the trends in the field of study.

Chapter VI Findings and Conclusion

Summary of findings and conclusions drawn are given in this chapter.

APPENDICES:

The following appendices are given in support of the study:

- List of Abbreviations
- Glossary
- Directory of databases
- Bibliographical References
- Subject Index

References:

1. Harrod's Librarians Glossary. Ed.6. London, Gower. 1987. p.193.

2. Ibid. p.71.

3. Ibid. p.378.

4. LANCASTER (Wilfrid. W). Towards paperless information systems. New York, Academic Press. 1978. p.85.

Chapter II

BIBLIOGRAPHIC DATABASES : Genesis, Development and Dimension

2.0 Introduction

The systematic study of any branch of literature warrants a detailed examination of its subject field. The present study is being concerned with computer-based bibliographical databases, an attempt is made in this chapter to examine the subject field of computer-based bibliographical databases under its various facets like genesis, development, dimension of the subject, etc.

2.1 Computers in libraries

The term 'computer' is defined in Chambers twentieth century dictionary "as a mechanical, electric or electronic machine for carrying out especially complex calculations".[1]

The modern electronic computer is not only capable of vast quantities of calculations; but also holds within itself the instructions that tell it which calculations to perform. The term 'computer' covers a wide range of machines from microcomputer through minicomputers to large mainframe computers.[2]

The period of 1970 and 1980 is considered as 'Information Technology Decade'. Since 1970, people of every professional stripe have become acquainted with information technology in every conceivable context. The spectacular spread of on-line computer

technology has been the most significant influence of all. The evolution of fourth generation computers in the late 1970s made them cheaper, faster and more prevalent, having more memory and greater logical capabilities.[3]

There is parellel advancement in communication technology and television fields. The mission of information scientist today is to perfect information system, to produce information software and in the process to help people realize the benefits which new information technology can provide and the enjoyment which greater access to human knowledge can bring.

2.2 Reasons for Developing Computer-based Systems:

In the words of Lucy A. Tedd, the major reasons for developing computer-based library systems are:[4] i) to manage a process rapidly, more accurately or less extensively; ii) to help overcome increasing library work loads; iii) to offer new and improved services to users and library staff; iv) to make use and external services; and v) as a solution in forming common system when libraries merge.

2.21 Environmental factors

The following interrelated factors prompted the application of computers in the library and information field[5]. They are:

i) Quantitative growth of information due to information explosion;

ii) Changes in the importance of information sources;

iii) Changes in the nature of information;

iv) Changes in the quantity of available information; and

v) Time Scale changes

2.3 Databases:

Maratha E Williams defines a database is "an organised set of machine-readable records containing bibliographic or document-related data".[6] A database typically includes a bibliographic citation plus an abstract of the material, but in some cases the data consists only of index entries and accession numbers of cited documents.

According to Ching-Chih Chen and Susanna Schweizer, a database "is a collection of information (or data) in machine-readable form accessible by computer".[7]

Harrod's Librarian's Glossary defines database as information stored in computer files, and accessible via remote terminal and telecommunications link. Databases are assembled and marketed by commercial firms and consortia, and may exist also in a conventional printed form. Each database generally covers one subject area or group of related subjects, and a fee is charged for access.[8]

J.C. Rowley says a database is "a collection of records in an accessible sequence, stored on an auxillary storage device such as magnetic tape or disk pack".[9]

The McGraw Hill computer handbook stated that a database refers to a collection of mutually related data, to the computer hardware that is used to store it and to the programs used to manipulate it.[10]

For Loomis database is a collection of logically related data that supports shared access by many users and is protected and managed to retain its value.[11]

According to concise encyclopedia of information technology database is "a structured set of records (usually a large set) which can be accessed using various keys.[12]

A bibliographic database is a collection of documents, journal articles, monographs, research reports etc, represented by a surrogate generically called a unit record. The unit record in a bibliogrphic database includes all the data of one bibliographic citation.[13]

A working definition for database is to be framed from all the above definitions as a database is a collection of organised set of records consisting of data elements in machine readable form.

2.31 Genesis and development

The back ground and development of computer based bibliogrpahic databases can be seen as a response to several parallel, and sometimes conflicting trends in both library and the publishing communities. To libraries, particularly to academic and special libraries the avialability of such databases is one aspect of a broader trend toward resource sharing which enables libraries better to serve the needs of their patrons. To publishers, databases represent on application of new technologies for disseminating information.[14]

Comprehensive indexing systems in the field of scientific and technological information were created first, during the last century

for example, the National Library of Medicine Catalogue and Index Medicus in United States. After the second world war there was a great increase in Research and Development activities and corresponding spurge in the output of scientific and technical information. Government also spent more and more amount to R & D activities. The number of scientists also increased considerably.

With the concomittant growth of information volume and availability of superior scientific research tools, scientists became more "informed" and therefore more productive.[15]

The Figure (1) illustrates the growth of world wide periodical production for the period 1960 to 1985 in the area of Science and Technology. From the figure it can be seen that in this 25 year period there has been a more than three fold increase in the number of periodicals.

Although bibliographic database appeared in the 1960s, they had their antecedents in the equivalent abstracting and indexing services which had been produced for many years mainly by learned societies and professional associations.

Engineering Index, now Engineering Information, was set up more than 100 years ago (in 1884) and Science Abstracts (now INSPEC) was founded in 1898 by the Institution of Electrical Engineers and the Physical Society.[16]

In the 1960 two main producers of databases emerged in the United states the National Library of Medicine and the Chemical Abstracts.

Another trend favouring the development of bibliographical databases is the switch to photocomposition and other computer aided production techniques on the part of publishers of conventional abstracting and indexing (A & I) serivces.[17]

On-line searching of externally produced databases was available from the mid 1960s. Three technological developments were responsible for the prevalances of on-line databases. They are the following:

i) evolution of computers with vast storage capacities and random access memories;

ii) development of simple acoustic couplers and modems which facilitate the interconnection of computers and the telephone system; and

iii) advances in telecommunication facilities which made possible transmission of large amount of data over long distances.

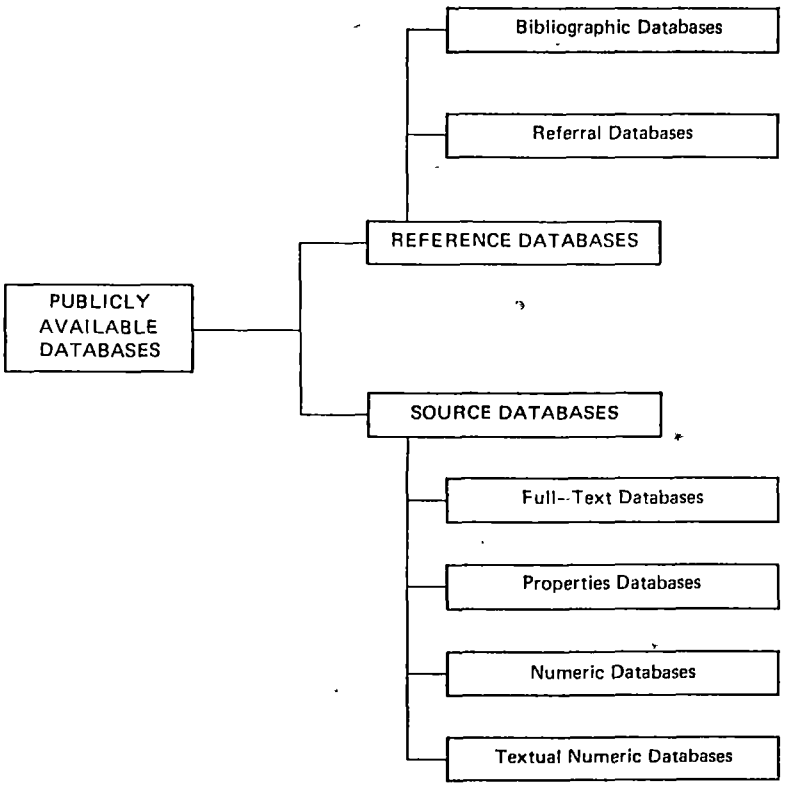
The first database in early days concentrated on science and technology fields. On-line retrieval systems were developed first by the System Development Corporation (SDC) in USA as early as 1965. MEDLINE of MEDLARS offered by NLM, USA was one of the first on-line bibliographic databases. DIALOG of lockheed Corporation, USA started functioning in 1969.

During recent years database concept has got greater attention. The library people are likely to encounter commercially available databases in various contexts.

2.32 Types of databases

Databases may be broadly divided into Reference and Source

Fig.2. CLASSIFICATION OF CURRENTLY SIGNIFICANT DATABASES



databases according to the 'Directory of online databases'.[18]
Reference databases can be further divided into the following:

a) Bibliographic: This database contains citations and/or abstracts of printed material such as newspapers, magazines, books, journal articles, patents or technical reports.

b) Referral: This database usually directs those who consult it to non-print sources such as organizations, expert individuals and audio-visual materials.

Source or non-bibliographic databases contain original source data, the full text, of original source information or materials prepared specifically for electronic distribution.

Source databases are further categorized into Numeric, Textual Numeric, properties; and full text databases.

A Diagramatic representation of the dtabases is given in figure No.2. External databases of central concern to librarians for expository purposes be divided into three major catalogue, viz., Bibliographic, Non-bibliographic and catalogue record databases.[19]

J.E. Rowley and C.M.D. Turner grouped bibliographical databases into six artificial categories.[20]

1. large discipline oriented databases coresponding to major abstracting journal eg. INSPEC, BApreviews.

2. interdisciplinary databases with coverage normally based on key or core journals. eg. SCISEARCH and SOCIALSCISEARCH.

3. Cross-disciplinary databases. eg. International Aerospace Abstract, METADEX.

4. Smaller, more specialised mission-oriented databases serving a particular technology with information needs cutting across traditional disciplines. eg. Food and science technology abstracts. Most 'Data analysis centres' can be placed under this. eg. Ergonomics abstracts.

RAPRA abstracts from Rubber and Plastics Research Association come under this category.

5. databases covering particular types of publication. eg. Derwent publications (patents), GRA (Government ResearchAnnouncements) Comprehensive Dissertation Abstracts from Xerox University Microfilms and NEXIS (from Mead Data Central, covering various newspapers).

6. repackaged information, new smaller packages at prices an individaul can afford, based on major services or a combination of major servies. eg. HEEP.

In addition to the above, the following types are also recognised. Databases are produced as a result of co-operative endeavour. eg. INIS (International Nuclear Information System) under the auspices of the Inernational Atomic Energy Authority in Vienna.

AGRIS is another database formed as a result of International Co-operation.

According to Prof. G. Bhattacharya, Computer Readable Databases may be categorised on the basis of several characteristics.[21]

On the basis of the types of data elements forming the records of the file, they can be classified as follows:

i) bibliographic databases containing bibliographic information eg. MARC II, CA condensates.

ii) bibliographic related database. eg. CASIAC (Chemical Abstracts Subject Index Alerts)

iii) Natural language text databases under this group four types.

a) Full text eg. system 50 databases of Aspen System Corporation.

b) Summarized text. eg. New York Times, Information Bank of New York Times, Inc.

c) Numercial databases. eg. Census tapes

d) Representational databases. eg. CA Registry Structure of Databases are grouped on the basis of status of producing agency. They are those produced by Government agencies and by private agencies.

a) Produced by Government agencies: The major databases under this category include MEDLARS of the NLM (USA), MARC II tapes of Library of Congress, ERIC tapes of National Institute of Education, DDC (Defence Documentation Centred tape of the Department of Defence, USA. GRA (Government Research Announcement) of NTIS, USA.

STAR (Science and Technical Aerospace Reports) tapes by NASA.

b) Produced by private agencies . They produce databases either on non-profit or profit basis.

eg. SPIN tapes of American Institute of Physics

BAPREVIEWS of Biosciences Information Service.

CA condensates of Chemical Abstracts Service PATELL of American Psychological Association etc. include those produced by non-profit orgnisations.

SCI tapes and SSCI tapes of Institute of Scientific Information, Excerpta Medica by Excerpta Medica foundations are prdouced for profit.

Databases on the basis of subject matter covered by them are classified as:

a) discipline oriented. eg. CA Condensates, MEDLARS, PATELL, POST.

b) mission - Oriented eg. INIS, STAR

c) Problem oriented eg. HEEP

d) Inter disciplinary eg. CBAC (Chemical and BiologicalActivities) and

e) multidisciplinary eg. SSI, SSCI.

N.R. Dittakavi also grouped databases under two main heads; viz; referral and source. Referral databases is again into Bibliographic and directories. Source databases are further divided into Numerical and full text databases.[22]

2.33 *Database Structure*

B.W. Romberg explains that, the database consists of number of data elements each of which is a unit of data that

is complete in itself. The data elements are recognized into logically related groups called data structures.

Bibliographic database includes all the data of one bibliographic citation. The record represents the document or article being indexed referred as the surrogate document, it is a substitute for the full text of the source. A surrogate is employed to avoid the expense of storing the complete texts of millions of articles in the computer.[23]

The unit record is made up of several elements called fields or paragraphs. The format of these element varies from vendor to vendor. The most used fields are mainly;

FIELD	
Accession Number	
Author	
Title	Unit Record
Source	or
Documet Type	Bibliographic Record
Descriptors	
Language	
Identifiers	
Abstract	

P.K. Roy describes the database structure in a recent article as follows. Input information of one record has been divided into 12 fields such as.[24]

1) Classification numbers

2) Author

3) Title

4) Source title

5) Source of publication

6) Index number

7) Standard number

8) Patent number

9) Language

10) Source agency

11) Keyword; and

12) Subject

These fields have defined as alpha and alphanumerical according to the type of input. The fields have also been divided into different character lengths according to the needs of the field. To retrieve information from the database all the above 12 fields can be used as access points.

Rowley describes bibliographical databases are a series of linked bibliographic records containing some combination or permutation of following components.[25]

a) document number

b) title

c) author

d) source reference

e) abstract

f) full text

g) indexing words or phrases

h) citation or number of references

i) organization originating the document or author's address

j) language of full document

k) local information. eg. location, special classification numbers.

2.331 Logical database structure

Mainly there are three types of data management available in database. They are:

a) Hierarchial structure

b) Network structure; and

c) Relational structure.

In the Hierarchial structure data records are organised into levels. Units of data are dependent and logically arranged in multilevel structures consisting of one root segment, any number of subordinate levels and any number of segment types at each level.

In the Network structure the arrangement is more or less hierarchial but with complex associations among the related groups. Each level may have relationship with more than one level.

In the relational structure all information with in the database are viewed as being in simple tables or relations. The relationship of a record in one table to a record in

another is indicated by having similar fields in each table. Each table is a relational model of actual data relationship

2.332 **Database Record**

An intermationally accepted data structure is MARC format. The MARC record format was designed by the Library of Congrers and the British Library with the object of being able to communicate a bibliographic description in a machine readable form in such a way that records could be reformatted for any conceivable purposes. Early trial around 1966, conducted by the LC, worked with the MARC I format, but this format was jettisoned in 1967 and superseded by MARC II or MARC. The MARC format includes upto sixty one data elements of which 25 are directly searchable. The MARC format comprises two sections;

Section 1 which gives information describing the bibliographic data; and section 2, which holds the bibliographic data itself. Thus the segment of magnetic tape relating to an individual records could be as:

Record Label	Directory	Control fields	variable data fields

The field that comprises section 2, and thus hold the bibliographic data are all variable length fields; and hence it is necesary to signal the beginning and end of each field. So,

each field is preceeded by a 3-character tag and two numeric indicators, and ends with a special delimiter. Tags consists of three numerals with in the range 000-945. The tags have a mnemonic structure in that they follow the order of a catalogue record, and the tags are for added, entries mirror those for main headings. For ex; the chief tags are:

100 personal author main entry heading

110 corporate name main entry heading

240 Uniform title

245 Title and statement of responsibility

250 Edition and statement of edition, author, editor,etc.

260 Imprint

300 Collation

400 Series

500 Notes

Each record starts with a label and a directory, both of which are supplied by a programme. The structure of the MARC record is deliberately complicated to facilitate flexibility.

2.34 **Off-line databases**

Computerised retrieval systems can be off-line batch processing or on-line interactive ones. The earliest true computerbased systems were those established at the Naval Ordnance Laboratory, Silver Spring, Maryland in 1959, and the system put into operation by Western Reserve University for the American Society for metals, apparently in 1960.[26]

The 1960s marked the era of computer retrieval in a off-line batch processing tape oriented mode. The mos important were the services initiated by the Armed Service Technical Information Agency, later the Defence Documentatio Centre, in the period 1959-63, the National Aeronautics an Space Administration in 1962, and the National Library o Medicine, whose MEDLARS service was launched in 1963. Thes agencies were regarded as pioneers of large scale bibliographi processing by computer.

Off-line systems offered many advantages over earlie information sysqtems such as peek-a-boo, unitterm etc. The are.[27]

i) the ability to provide multiple access points conveniently and economically;

ii) the ability to generate printed output including interfac with devices for photo-composition and for computer outpu micirofilm (Com);

iii) the ability to conduct many searchers simultaneously

iv) the ability to offer multiple products or services a printed indexes, SDI; retrospective search from single input.

v) the ability to monitor its own operation and to produc various types of management information;

vi) the ability to conduct 'complex' searches involving man terms in various logical combinations; and

vii) the ability to produce a dtabase in machine readable form on magnetic tape that can easily be duplicated and shipped to to other information centres thus facilitating development of network and co-operative ventures.

The off-line have many disadvantages. They are:

i) Searching systems in which the searcher has to think in advance of all possible search approaches and to construct a search; that when matched with the database is likely to retrieve all the relevant literature;

ii) the search results are substantially delayed; and

iii) the search in off-line system will generally be a search of delegated nature. That is, an intermediate person is needed *for searching; the searcher gets no opportunity to conductown* search.

2.35 **On-line bibliographic databases:**

The present day is characterized by an accelerated growth of the computerised bibliographic databases throughout the world. The current general availability of on-line access to bibliographical databases is the inevitable technological consequence of applying computers to the processing of bibliographical information.

The term 'On-line' refers to the fact that the searcher is in direct communication to the database he wishes to interogate and to the computer on which this database is loaded. Users communicate hereby means of a terminal which may be a simple typewriter terminal or some type of videodisplay with associated keyboard connected to the computer by means of communication line.[28]

2.351 **History and development**

The history of information system fall into several periods. Before the 1940s the only information retrieval systems were of purely manual type indexes and catalogues. These retrieval devices are pre-cordinate and non-manipulative.

The invention of postcordinate retrieval systems in the 1940s is an important event in the history of information retrieval. Post-cordinate systems are the obvious forerunners of modern computer based systems.

The 1950s brought early forms of mechanization of these principles by means of Punched Card Data Processing Systems. Inthe 1950s progressive use was made of the computer in the field of specialised information, however at this stage computers were only used in the creation of indexes.

In the 1960s two main producers of databases emerged in the U.S. is the N.L.M and Chemical Abstracts. At the end of 1960s producers started to think of magnetic tape as an information product itself.

The computer was first publicly applied to the processing of bibliographical information in 1961, when the Chemical Abstracts Service (CAS) produced Chemical Title (CT), a machine generated alphabetical subject index to the 600 journals covered by the parent journal Chemical Abstracts.[29]

By the end of the 1960s a whole range of new CAS publications had been produced from a machine readable database. The current

awareness and retrospective searches were run in 'batchmode' in information centres, each of which dealt with a specific discipline or subject field. For example, UK MEDLARS service based at the British Library at Boston Spa, or the UK Chemical Information Service (UKCIS) at Nottingham University.

One factor in the growth of computer based search services was the availability, from the late 1960s onwards, of machine readable versions of secondary indexing and abstracting publications such as 'Index Medicus'.

For the first time in 1963, two parellel projects relating to on-line systems were undertaken at Massachusetts Institute of Technology (MIT) and the System Development Corporation (SDC) by 1964 had been able to develop a rapid bibliographical retrieval system called on-line Retrieval of Bibliographic Information Time Shared (ORBIT). The successful demonstration of ORBIT had given impetus to the on-line service for greater use in information retrieval.

Kessler's experimental system in physics known as Telchnical Information Project (TIP) developed at MIT was notable for several reasons. Not only it was the first important on-line systems for bibliographic searching, but also it incorporated some unconventional approaches to searching.[30]

Interactive on-line retrieval systems, which enabled the user to communicate directly with the database in a conversational mode, were being developed by SDC as long ago as 1965.

In autumn of 1967 the NLM began to experiment with on-line access to its database, when a contract was signed with SDC, who

installed and evaluated their ORBIT system at NLM, using a small database in the field of neurology.

First large scale on-line retrieval system was Remote Console (RECON) system of the NASA, USA which became operational in 1969. RECON is now an international system; the NASA database is available for on-line searching in Europe through European Space Agency. RECON was designed for NASA by Lockbeed Missiles and Space Company, and equivalent software is commercially available from Lockheed as DIALOG.

For over two decades computer technology has influenced the handling of bibliographical information in many developed countries to provide better access to literature. The combination of computer technology and telecommunication giving its device, the speed, lightness and intelligence of computers. The combination of computer technology and telecommunication have resulted into 'on-line' services which is now being used for information retrieval.

In the early 1970s the use of on-line bibliographical systems has become widespread in the U.S., and recently they have become generally available in Europe. Development in computer systems and the related software in the early 1970s enabled the searcher to have 'on-line' or 'interactive' access to computer system.

A pilot on-line experimental service offering access to subset of Index Medicus has become operational in June 1970 and about 90 medical institutions in the U.S. giving access to Abridged Index Medicus (AIM), covering 100 of the most important journals. The

project utilized SDC's IBM 360/67 computer linked to a communication network, the Teletypewriter Exchange Network (TWX), which already had terminals in medical institutions throughout the country. The response from users was enthusiastic, and a fully developed MEDLINE system introduced in October 1971 giving access to a base containing 1200 of journals covered by Index Medicus.[31]

The MEDLINE services initiated in 1971 is perhaps the largest on-line retrieval network now in existence on a single subject field. The Data Central System has been used with a number of important databases, especially in the legal field. One important application is OBAR (Ohio Bar Automated Research), a legal retrieval system operated by Ohio State Bar Association, LEXIS, a legal database of national scope, also uses the Data Central Software. Hundreds of millions of characters of legal text are now available from on-line search through this software.[32]

The Information Bank of the New York Times, the most important on-line system providing access to current awareness information become operational in the early 1970s.

Other software for on-line searching is available from Battelle Memorial Institute (BASIS), IBM (STAIRS) and Infoda Systems, Inc. (INQUIRE).

A development that has had significant impact on the provision of on-line information service is the emergence of Time-shared data communication networks such as TYMSHARE and TELENET operated by means of leased voice-grade telephone lines. These networks of

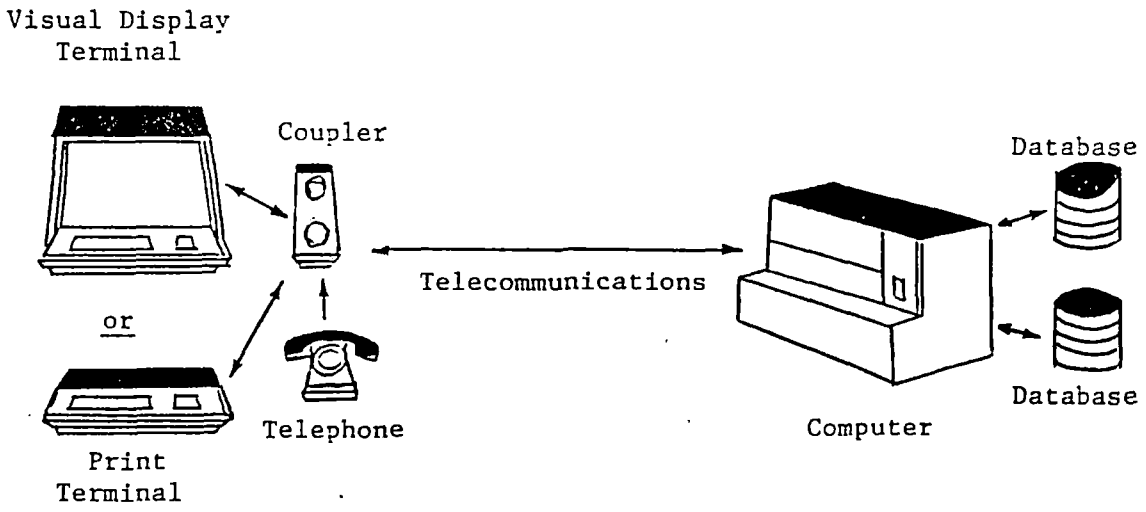
leased lines, now spans the U.S. and extend to Canada, Mexico and Europe.[33] These networks are used to link computer facilities with eachother and more important, to give users of on-line terminals the ability to access a remote database at communication rates that are considerably less than the rates that would be involved in the use of dedicated lines.

The very rapid growth in the number of machine readable databases that have become available in the last twelve years, coupled with on-line facilities for making the databases widely accessible, has created a revolution in the provision of information services. It is estimated that in 1977, that over 500 files were in routine use in the provision of information services. They span an extremely wide range from very general, covering all medicine or all chemistry, to highly specific, covering for example, files on interatomatic potentials and tall buildings.[34]

In the early 1970s many special libraries tended to acquire databases most relevant to their needs and either write or acquire necessary software to run a retrospective and or SDI search service in-house. Various organizations had already been involved indeveloping software for on-line searching, acquiring the databases and offering on-line search services. Examples of such organizations are BRS, Lockheed and SDC in the USA, CAN/ONLINE in Canada and BLAISE in Britain.

The use of information resources like database and document files can be maximised by providing simultaneous access to several

Fig.3. HARDWARE REQUIRED FOR ONLINE SEARCHING



users in a network environment. This led to the growth of International information systems. The important ones are International Nucleur Information System (INIS), AGRIS, DEVIS and Science and Technology policies Information Exchange Systems (SPINES).

2.352 **Modality of on-line searching:**

On-line searching requires a telephone, a terminal, a modem and access to a communication network. The equipments involved in on-line searching is shown diagramatically. (Fig. No.3)

The basics of searching consists of search commands. Commands are machine-readable search terms used to instruct the computer system to carryout certain search functions. The commands generally vary from one system to the other. A search in an on-line system will normally involve four stages.[35]

1. Log-on procedure. Where by the user calls the computer on which the needed database is loaded, identifies himself as a legitimate user and asks for access to a particular file.
2. Search negotiation, in which the user tries out various searching strategies, using various aid provided by the system.
3. Result manipulation, in which the user specifies how he would like the search results to be presented to him
4. Log-off procedure. In on-line search the user use both index terms and commands. The basic and supplementary commands of DIALOG in on-line information search is given in table[36] (Table.No.1)

Table 1. DIALOG COMMAND OPTIONS
(BASIC AND SUPPLEMENTARY COMMANDS)

Function	Natural Language	Abbreviation	Symbol
Begin a search in full mode	BEGIN	B	!
Begin a search in File n	BEGINn	Bn	!n
Begin a search in default file	BEGIN B		!B
Display part of an index	EXPAND	E	"
Display related thesaurus terms	EXPAND (words)	F (word)	"(word)
Request postings from index	SELECT	S	#
SuperSELECT: to request postings on more than one search element related by Boolean operators	SELECT	S	#
To use SuperSELECT and have each search element assigned a set number	SELECT STEPS	S STEPS	SS
Intersect sets with Boolean operators	COMBINE	C	$
Type records online on a print terminal	TYPE	T	'
Display records online on a CRT terminal	DISPLAY	D	%
Request offline prints	PRINT	PR	&
Cancel previous offline print request	PRINT-	PR-	&-
Restrict a set to some requirement	LIMIT	L	)
Restrict all subsequent sets to some requirement	LIMITALL	LALL	)ALL
Cancel LIMITALL	LIMITALL/ALL	LALL/ALL	)ALL/ALL
Request another screen of display after EXPAND	PAGE	P	0 (zero)
Request online explanations	EXPLAIN		?
Retain certain records in set 99	KEEP	K	(
Give time and cost; starts new costing	END		=
Display sets since BEGIN	DISPLAY SETS	DS	@
Display set n	DISPLAY SETSn	DSn	@n
Sign off and disconnect from the system	LOGOFF LOGOFF HOLD LOGON		
Change to another file	.FILEn		
Sort output online	.SORT		
Give time and cost estimate since last BEGIN	.COST		

Information may be retrieved from a database in a number of ways; by reading off screen whilst on-line (especially videotex); on-line printing, on-line ordering of material that is printed offline and sent to the user either as individual or batch orders; downloading of the databases into the user's computer; distribution in electronic form eg. Magnetic tape or floppy disk; and finally the distribution of printed material where only the abstract or reference of which is actually stored on the database.[37]

The mode of transmission over a terminal is variable; a switch can be set to enable the searcher to opt for either half or full duplex. In the half duplex mode, communication will take place in either direction at a time, from a terminal to computer or vice-versa. Fullduplex mode permits communication to take place simultaneously in both directions over the same line.

Information may be transmitted between the terminal and host computer over the direct dialling system of a telephone and the public telephone and telegraph networks (PTS) over private lines, or via facilities of data communication net works. Communication network permit terminals to be connected to systems such as DIALOG, ORBIT or MEDLINE by dialling the nearest mode of network; this will usually mean a local telephone call to the network number. The user will then pay a communication charge from the mode to the host computer, $8 - $10 per contact hour in the US and $22 per hour from Europe to the host computers in the USA.[38]

Information exchange is achieved over the communication networks by the transmission of electrical signals in soundwaves over the network distances between the user's terminal and the host computer. When the signals are transmitted, the computers constant level direct current pulses are converted into signals suitable for transmission via telecommunication facilities. The reverse process is performed at the user's terminal. This process is called Modulation and Demodulation, and the device by which it is accomplished is the electrical coupler, the modulator or modem. An acoustically coupled modem permits data to be transmitted via the receiver of a standard telephone.

Access to an on-line retrieval system is made by either dialling into the host computer, or via the nearest mode of communication system over a standard telephone.

Searching is the interaction between the user and the system. Interaction is effected in a conversational mode with the searcher and the search program taking turns in communicating with each other. These communications are on three levels.

i) the definition and redefining of search statements

2) the sending of instructions to the host computer through a command language

3) the answering of standard questions posed by the program which require the searcher to make decisions.

The stages involved in the retrieval of information are analogous to the three functions. They are:

a) the analysis of the search question;

b) the translation of the question into the indexing language of the system; and

c) the formulation of the search strategy; the search proper, the matching of the terms in the search strategy against the terms in the database.

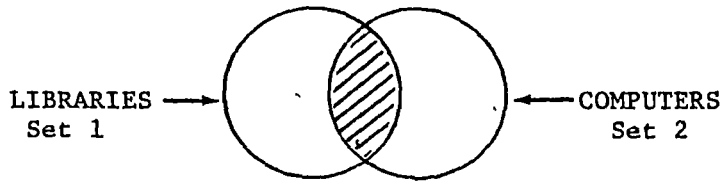
2.353 **Logic**

The search logic is used for introducing search commands. It is basically two types, viz; Boolean and weighted Term Search Logic. The former is the most prevelant. Search logic is the means of specifying combinations of terms which must be matched in retrieval. The terms linked by the search logic into a search statement may be drawn from a free or controlled index languages. Profiles usually need to be more complex with free language searching as greater provision for the entry of documents under synonymous and related terms is necessary.

Boolean operators are words used in all retrieval systems to create search logic which enables the retrieval of terms in various combinations. The most commonly used Boolean operaters are: AND OR and NOT.The role of Boolean operators in information search is given in the following figures. (Fig. No. 4-6)

The AND operator causes retrieval of records where two or more terms or sets of terms co-occur in the same record. It is used to decrease retrieval output. Fig.4

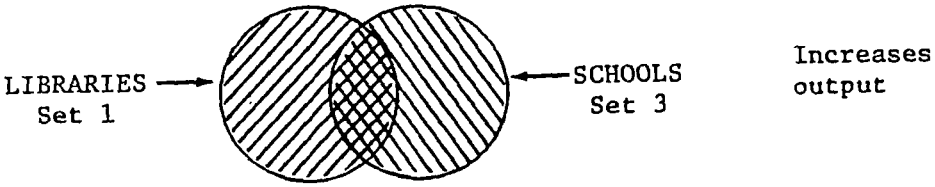
AND



SELECT LIBRARIES AND COMPUTERS
COMBINE 1 AND 2

The OR operator causes retrieval of any or all of ORed terms, and increases retrieval output.Fig.5

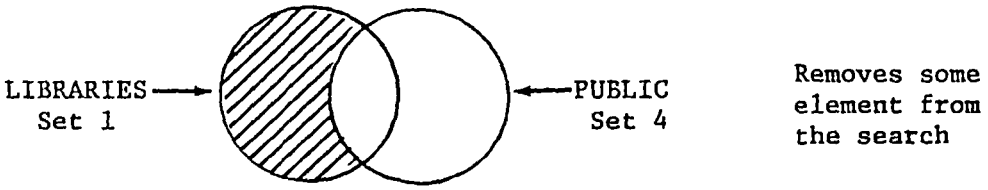
OR



SELECT LIBRARIES OR SCHOOLS
COMBINE 1 OR 3

The NOT operator, on the otherhand is used to remove some elements from the search, because it prevents records indexed, under specifying terms from being retrieved. Fig. 6

NOT



SELECT LIBRARIES NOT PUBLIC
COMBINE 1 NOT 4

It is obvious that information scientists are evolved in the searching of on-line facilities to a greater extent. The search procedures for on-line services are often very complex and therefore the occasional user it is not cost effective to spend many hours learning search procedures to enable him/her to perform their own search.

To increase the use of on-line databases it is vital that "user-friendly" software becomes more widespread to enable non-professionals to access efficiently and effectively search a database. Basically there are three methods by which on-line services may be obtained; via a human expert, an intermediary; or direct access by users.

At present intermediary aided access systems are by far the most common. One of the major reasons for such facilities is the complex and cumbersome procedures which are often involved in searching of a database. The users are reluctant to spend considerable amounts of time learning how to deal with each particular system software in the most efficient and effective mode.

2.354 **Advantages of on-line Bibliographic database searching**

Many of the advantages are offered by use of on-line bibliographic searching are:[39]

1. Speed: The time required to complete most searches is 10 to 15 minutes, a fraction of the time required by a corresponding manual search in printed indexes.
2. Flexibility: On-line database searching increases the number of points by which an information source may be accessed.Examples of added access points include language, type of publication, codes, author affiliation, price, country of publication, and abstract. These additional access points

enable a searcher to tailor a search to a client's precise needs.

3. Comprehensiveness: An organization need not regularly puchase, store, and organize large numbers of sources in anticipation of an informed need. Access to online bibliographic databases enables an organization to comprehensively enables acquire those bibliographic information sources when it needs them.

4. Currency: Machine-readable indexes are generally updated on a monthly, weekly, or even daily basis. Thus, the information included usually is more current than that contained in manual indexes.

5. Convenience: On-line searching can be done anywhere near a phone and an electrical outlet.

6. Cost-effectiveness: The results of a comprehensive, multifaceted search takes far fewer person-hours to produce through online searching than the same results produced through manual searching. The search time is greatly reduced; the clerical time required to produce the typed bibliography is eliminated.

7. Enhanced Job satisfaction for information professionals: The use of tools such as these gives information professionals the ability to deliver much more information in much less time. Because of on-line database searching they can serve their users with a thoroughness and skill previously impossible.

The major disadvantages of on-line bibliographic database searching are the following:

1. Lack of information for retrospective searching: Typically databases represent literature from 1970 forward.

ii) Scope: Most databases are in the fields of applied and pure sciences, medicine, agriculture, social sciences, and education. There is substantial gulf in the area of humanities.

iii) Availability: Malfunctioning computer systems, terminals, and/or communication lines can cause the databases to be unaccessible for a certain period of time. Malfunctions can also occur in the midle of a search, thus resulting in a lost search, wasted money and time, and much frustration for both the searcher and the requestor.

iv) Finances: The costs of searching are visible and direct. Financial arrangement must be made cover or recover expenses.

2.36 **Media of Storage:**

The important media used for automatic storage and retrieval are magnetic tape, optical disc, microfiche etc. Optical disc storage technology is more applied to on-line.

In the area of the distributed databases, one of the most interesting technological development is that of optical storage media the most notable single system being that Read only Memory Compact Disc (CD-ROM). However, there were many preceeding attempts indeveloping similar Laser Optical Storage devices.

2.361 **CD-ROM**

The development of CD-ROM technology introduces the concept of the 'interactive document' which offers many advantages:[40]

i) It has a very high storage capacity, one CD-ROM can store upto 500 million bytes of ASC II (encoded) information (equivalent to one year of Chemical Abstracts) or 5,000 pages of facsimile information. It has been established that in comparison with traditional modes of storage, the cost of an optical disc system is considerably lower.

ii) There is a low run-oncost after the initial mastering.

iii) considering copy right, it is much more difficult to copy a CD-ROM than to copy a printed product, thus information will acquire a greater degree of protection if placed in a CD-ROM format.

iv) The players for CD-ROM are becoming less expensive.

v) Local processing of large databases will be easily facilitated.

vi) the disks are extremely robust, easily stored and despatched using conventional postal services.

vii) the process of searching and using CD-ROM is simple in comparison with on-line database search procedures, which can often be cumbersome and complex.

viii) It is possible to keep the terminal, processor, player and CD-ROM disks in the same place, thus creating a work station which need not relay many external services.

In the future, an end user may be able to request and

receive information in total ignorance of its source, be it on-line, CD-ROM or magnetic tape.

The major perceived disadvantages of CD-ROM technology are those of security and slow search speed.

The future for the micro-form information industry may well lie with the technology of CD-ROM. It should be noted that just as database publishers and producers are beginning to use CD-ROM as a distributive medium, one of the major manufacturers of CD-ROM, Sony, are dropping the standard CD-ROM format in favour of the OROM disk, but this is still under development. The ORMOM disk are double sized, 5.25 cm in diameter and employ constant angular velocity (CAV) for faster access.

2.37 **Conclusion:**

Information is all pervasive. There is no activity where information is not required or used. We find computer specialists, communication specialists, Documentalists and many others feel that the discipline of information actually is a part of their own discipline (a bibliographic database), they tend to lay more emphasis on other related aspects. A good number of databases already in operational which do not have satisfactory retrieval efficiencies. This is mainly because, in designing the databases adequate importance is not given to the aspect of vocabulary control, retrieval efficiencies etc. Therefore it is necessary for Information Specialists like librarians and documentatlists to pay adequate attention to these aspects in the design of databases especially in the case of bibliographic data bases.

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Chapter III

BIBLIOGRAPHIC DATABASES IN INFORMATION SERVICES: INTERNATIONAL AND NATIONAL SCENARIO

3.0 Introduction

The development of bibliographic databases has revolutionised the concept of information services in many countries especially in developed countries. In the Global scene, the USA, UK and Japan stand in the forefront in the production of information products and services. An attempt is made in this chapter to give a brief account of database producing agencies, database vendors and their information products and services available at the international and national level. An attempt is also made to give the cost of on-line database search and the trend in the growth of databases at the global level.

3.1 Database Producing Agencies

The organization which create a database is known as the database producer. If often publishes a corresponding printed index. For example, American Psychological Assoication is both the publisher of the printed index 'Psychological Abstracts' and the producer of PSYCHINFO database.

A database producer is responsible for the initial collectioncompilation of data into a computer readable form. A database producer can be classified according to its organizational type and are listed by type with examples for each category.[1]

	PRODUCER	DATABASES
3.11	Commercial	
	Predicasts Producer, Inc.	PROMT
		F & S Indexes
	Data Courier	ABI/INFORM
	Institute for Scientific	SCISEARCH
	Information	SOCIALSCISEARCH
3.12	Government	
	Educational Resources	ERIC
	Information Centre	
	National Agricultural Library	AGRICOLA
	U.S. Government Printing Office	GPO MONTHLY
		CATALOG
3.13	Professional Society	
	American Socety for Metals	METADEX
	American Psychological	
	Association	PSYCHINFO
	Institute of Electrical Engineers	INSPEC

Of the databses, 40% are produced by not for profit organisations, most of which are associated with professional societies. A further 40% fall into the category for profit/commercial organizations and the remaining 20% are Federal Government Agencies and federally supported institutions.[2]

Many organizations involved in producing abstracting and indexing publications have used computer systems in the production

of these printed information sources and have also made the resulting databases of bibliographic records available for on-line searching via one or more of the search services such as Lockheed's DIALOG service, the European Space Agency's Information Retrieval Services (ESA-IRS) and SDC.

The number of bibliographic databases available for public searching grows each year. In the latest edition of the 'Directory of on-line bibliographic databases' by Aslib, have listed 179 bases likely to be of particular value to librarians and information searchers with day to day enquiry work. In total these databases offer access nearly 80 million references. Some of the most popular bibilographic databases are listed below.[3]

SOME POPULAR BIBLIOGRAPHIC DATABASES

DATABASE	SUBJECT	STARTED YEAR
ABI/INFORM	Management and administration	1971
AGRICOLA	Agriculture	1970
BIOSIS	Biology	1969
CASEARCH	Chemistry	1967
COMPENDEX	Engineering	1970
ENERGYLINE	Energy	1971
ENVIRONLINE	Environmental Science	1971
ERIC	Education	1966

INSPEC	Physics, Electrotechnology Computers and Control	1969
MANAGEMENT CONTENTS	Management	1974
MEDLINE	Medicine	1966
NTIS	US Government reports	1964
SCISEARCH	Science	1970

The subjects covered by these bibliographic databases are mainly scientific and technological but increasingly social sciences, humanities, business and current affairs material is being made available. The information recorded about an item varies greatly between databases. In addition to the bibliographic databases there are also publicly available non-bibliographic databases known as databanks. Each database is unique in many ways. A brief account of the major database producing agencies in the field of Science and Technology are given below:

3.14 **National Technical Information Service (NTIS)**

The National Technical Information Service (NTIS) of the U.S. Department of Commerce publishes bibliographical database generated by the Federal government. NTIS acts as a clearing house for scientific, engineering and other technical documents. NTIS collection covers research from 1964 to work recently completed and topics run from Astrophysics to Zymolysis and there is even smattering of materials on "soft" scienes.[4] eg. Sociology and Lingustics. Full text copies of the most of the cited documents are

available from NTIS either in print or microfiche. This database is available for on-line searching via interactive terminal connected to any one of the nation's prime on-line retrieval systems: DIALOG by Lockheed and ORBIT by System Development Corporation. In addition, NTIS conducts "Published searches" on selected subjects of world-wide interest.

3.15 **Engineering Index**

COMPENDEX is the machine readable counterpart of the Engineering Index (Ei) monthly. Ei prepares in depth abstracts of significant articles, professional papers, symposium and the like, embraicng all disciplines of engineering. Material is arranged in the files according to a controlled list of subject headings and subheads with a hundred cross references. In 1977 Ei authorized NTIS to publish searches it conducts of the Ei databases as well as joint searches of Ei and NTIS databases.

3.16 **Chemical Abstracts**Chemical Abstracts Service (CAS) monitors some 14 scientific and technical periodicals from at least 150 countries, as well as pertinent books, reports, dissertations, conference proceedings and the like. To capture important peripheral work CAS includes in its purview journals and papers from such fields like Metallurgy, Biology and Earth scienes.

Chemical Abstracts Condensates (CA Con) is the machine-readable version of chemical Abstracts, a printed bibliographic tool that has been published by CAS since 1907 and is updated wekly. CAS also publishes twelve other machine readable bibliographic databases[5] They are:

1. Food and Agricultural chemistry
2. Chemical Industry Notes
3. Energy
4. Chemical Biological Activities
5. Polymer Science and technology
6. Chemical Titles
7. Materials
8. Patents Concordance
9. CAS Source Index
10. Ecology and Environment
11. CASIA (CA subject Index Alert)
12. CASEARCH

3.17 Inspec

INSPEC (International Information Service for the Physics and Engineering Communities) is a department of the Electrical Engineers, U.K. This London-based organization publishes abstract journals and complies several machine readable bibliographic databses. Physics abstract is updated twice a month and other databases, Electrical and Electronics abstracts and computer and control abstracts both published jointly with the Institute of Electrical and Electronic Engineers of the U.S. are issued monthly. These files dubbed as A,B, and C contain citations and extensive abstracts. Latest edition of the Directory of on-line bibliographic databases' shows that INSPEC database contain approximate number of 2,002,000 records.[6]

A list of the database producing agencies is available in the Appendix (3).

3.2 Database Vendors

The dramatic upsurge in use of machine readable databases since th early 1970s is in large measure due to the development of intermediaries for distributing the information contained in those databases. A database vendor is the organization which facilitates the searching of databases. The vendor obtains machine-readable detabases from the producers, and process them into a format suitable for interactive searching. The vendors sell across to their own or other producer's databases on their computer systems and it is the host organizations software which makes it possible to retrieve or manipulate the data. The host organization is quite distinct from the organization compiling and undating the databases. There are a number of major suppliers of on-line search services who mount databases on a computer and sell across to these data bases. These organizations are known as on-line spinners or on-line hosts.[7] The larger on-line hosts offer access to a number of databases and these hosts are also called 'Supermarket hosts'. eg. DIALOG, SDC. There are also vendors/hosts concentrate on the provision of specialised databases. eg. LEXIS and NEXIS.

The three major on-line database vendors are System Development Corporation (SDC), DIALOG Information Service, Inc (formerly Lockheed) and Bibliographic Retrieval Services, Inc (BRS). A subscriber anywhere in the country needs only a telephone, an acoustic coupler and a terminal to access any of the various databanks maintained by the above three distributors. Some of the other important database vendors are BLAISE, INFOLINE, DATA-STAR, ESA-IRS, DIMDI, NLM etc.

The following brief descriptions provide details of the three major database vendors.[8]

3.21 DIALOG

The DIALOG Information Retrieval Service which is the part of the Lockheed Missiles Coporation of Palo Alto, California was one of the first on-line search services started operations in 1972. Lockheed makes its stable of databases available to subscribers via both the TYMSHARE and the TELENET Communication net work. The search software has evolved from software, known as RECON developed by Lockheed for the U.S. National Aeronautics and Space Administration (NASA). Now the DIALOG has more than 175 databases available in a very wide variety of subjects covering science, technology, engineering, social sciences, business, arts, current affairs and economics. Large scientific and technical files include CASEARCH, SCISEARCH and BIOSIS PREVIEWS. SDI is available on a number of databases. DIALORDER is an on-line ordering service also offered by this. Various search aids and training facilities are provided.

3.22 SDC

The System Development Coporation (SDC) started to offer an on-line search service in 1972. Currently SDC has about 80 databases which cover a wide varieity of subjects such as business and economics, chemistry, engineering, electronics, energy and environment, industrial science, U.S. Government reports and legislation, patents and social sciences. Many of the SDC files are scientific and technical. Several of the exclusive databases cover petroleum and fossil fuels. SDC ORBIT offers certain special

services like SDI service, and the facilities for users to establish and maintain their own private databases. 'Electronic Mail drop' is an on-line document ordering service from SDC. Training programmes, search aids and publications are also offered.

3.23 BRS

Bibliographic Retrieval Services, Inc (BRS) based in Scotia, Newyork is the newest on-line vendor of multiple databases which commenced operation in 1977 to provide innovative and cost-effective on-line search services. Its major service is to provide on-line access to bibliographic and full text databases. The search software BRS/SEARCH is available for use on mainframes, mini or microcomputers. BRS is a small host offering access to around thirty databases. BRS offers MEDLINE, DRUGINFO and other medical databases not available through other supermarket hosts. BRS also has two serials files from National Agricultural Library and Library of Congress viz, NALSERIALS and MARC SERIALS respectively. BRS offers an SDI service also. A cross database for multiple searching (BRS/CROSS), on-line accounting, private database services and on-line catalog services are also available. Prices tend to be lower than those of SDC and DIALOG.

Out of these three, DIALOG has most on-line database publicly available. Eventhough the information in a database is much the same in all three vendor systems, the format of unit Record and searching characteristic vary.[9] The difference in format for a unit record of a same article is clear from the figure.7

Fig. 7 Unit records of the same article in three systems viz, BRS, DIALOG AND SDC.

BRS

AN - 78-07686
TI - Britain and Economic Miracles
AU - Pratten, Cliff
SO - Management Today (UK) (MANTAI,MTO), PP.7-8, ISSN 0025-1925, March 1978
DT - J (Journal)
LA - English
IT - UK; Germany; SWEDEN; Wages & salaries; PRICES; PRODUCTION; Exports; Balance of payments; R&D; Economic analysis; UNEMPLOYMENT
AB - During the 1950s and 1960s, Britain had a comparatively slow growth rate while Germany and Sweden experiences rapid growth of output led by exports. Differences in growth rates narrowed during 1970-75, but inflation became the major problem. Since 1975, there have been changes in performance of all 3 countries. Now unemployment is the center of concern with Britain having the highest level. In Germany, wages and prices have risen more slowly because of adherence to pay norms. Sweden's wage-price record has deteriorated due in part to world economic recession, rapid wage increases recession of export industires, and changes in control of the country. Without the North Sea, Britain would have a strong deficit. The nation is finding its alternatives include increasing the competitiveness of its industires faster than those overseas and using the North Sea project as a means to increase the use of capacity and employment. Tables.

DIALOG

78007686 ID No: 78007686
Britain and Economic Miracles
Pratten, Cliff
Management Today (UK) 7-8 March 1978 Coden: MANTAI ISSN 0025-1925
Jrnl Code: MTO
Doc Type: JOURNAL PAPER
During the 1950s and 1960s, Britain had a comparatively slow growth rate while Germany and Sweden experiences rapid growth of output led by exports. Differences in growth rates narrowed during 1970-75, but inflation became the major problem. Since 1975, there have been changes in performance of all 3 countries. Now unemployment is the center of concern with Britain having the highest level. In Germany, wages and prices have risen more slowly because of adherence to pay norms. Sweden's wage-price record has deteriorated due in part to world economic recession, rapid wage increases, recession of export industries, and changes in control of the country. Without the North Sea, Britain would have a strong deficit. The nation is findig its alternatives include increasing the competitiveness of its industries faster than those overseas and using the North Sea project as a means to increase the use of capacity and employment. Tables.
Descriptors: UK; Germany; SWEDEN; Wages & salaries; PRICES; PRODUCTION; Exports; Balance of payments; R&D; Economic analysis; UNEMPLOYMENT

SDC

AN 78-07686.
AU PRATTEN-CLIFF.
TI BRITAIN AND ECONOMIC MIRACLES.
SO MANAGEMENT TODAY (UK). PAG: 7-8. MARCH 1978.
PT 02.
CD MANTA.
YR 78.
DE UK. GERMANY. SWEDEN. WAGES-&-SALARIES. PRICES. PRODUCTION. EXPORTS. BALANCE-OF-PAYMENTS. R&D. ECONOMIC-ANALYSIS. UNEMPLOYMENT.
JC CD-MTO.
IS 0025-1925.
AB DURING THE 1950S AND 1960S, BRITAIN HAD A COMPARATIVELY SLOW GROWTH RATE WHILE GERMANY AND SWEDEN EXPERIENCES RAPID GROWTH OF OUTPUT LED BY EXPORTS. DIFFERENCES IN GROWTH RATES NARROWED DURING 1970-75, BUT INFLATION BECAME THE MAJOR PROBLEM. SINCE 1975, THERE HAVE BEEN CHANGES IN PERFORMANCE OF ALL 3 COUNTRIES. NOW UNEMPLOYMENT IS THE CENTER OF CONCERN WITH BRITAIN HAVING THE HIGHEST LEVEL. IN GERMANY, WAGES AND PRICES HAVE RISEN MORE SLOWLY BECAUSE OF ADHERENCE TO PAY NORMS. SWEDEN'S WAGE-PRICE RECORD HAS DETERIORATED DUE IN PART TO WORLD ECONOMIC RECESSION, RAPID WAGE INCREASES, RECESSION OF EXPORT INDUSTRIES, AND CHANGES IN CONTROL OF THE COUNTRY. WITHOUT THE NORTH SEA, BRITAIN WOULD HAVE A STRONG DEFICIT. THE NATION IS FINDIG ITS ALTERNATIVES INCLUDE INCREASING THE COMPETITIVENESS OF ITS INDUSTRIES FASTER THAN THOSE OVERSEAS AND USING THE NORTH SEA PROJECT AS A MEANS TO INCREASE THE USE OF CAPACITY AND EMPLOYMENT. TABLES.

3.3 Services available from Computerised databases

One of the chief merits of a computer readable database is the potential for marketing a variety of information services by formatting one set of input. Each service is tailored to meet a distinct need. Typical database products include.[10]

Selective Dissemination of Information (SDI,) Group SDI, Standard SDI, on-line SDI printed abstracting and indexing journals and their indexes, batch retrospective searching, on-line retrospective searching, Magnetic tape service (buyor lease tapes), Review services, thesauri, classification schemes, lists of journal covered reports and computer software. On-line database enables the information professional to perform the searches to satisfy a diversity of needs like retrospective search, comprehensive search, short search, SDI search and ready reference search. A list of databases and their vendors is given in Appendix (3).

3.4 Databases in different subject fields

The present day is characterised by the proliferation of bibliographic databases in almost all subject fields. A detailed description of the various databases is given in the Appendix (3). So an overview of some of the databases under different heads viz; Current affairs, Newspapers, Dissertaions and patents, Interdisciplinary, Sciences and Technology, Humanities and Social Sciences are given below.

a) Current Affairs and Newspapers. under this head the following are the some of the important databases.

BIPA

MONITOR

NDEX

NEWSEARCH

NATIONAL NEWS PAPER INDEX

b) Dissertations and patents: Important databases under this head are; COMPREHENSIVE DISSERTATION INDEX, INPADOC and WPI.

c) Science and Technology.

Under the head of Science and Technology the important databases are; AGRICOLA, AGRIS, BIOSIS PREVIEWS, CAB ABSTRACTS, CASEARCH, CANCERLINE, EBI, ELECTRICAL AND ELECTRONIC ABSTRACTS, ENERGY LINE, ENVIROLINE, EXCERPTAMEDICA, FSTA, GEOREF, INSPEC,MEDLINE, METADEX, NASA, PHYSICS ABSTRACTS, SPIN, TROPAG and WORLD TEXTIELS.

d) Humanities

In the subject field Humanities, the important databases are: PHILOSOPHERES INDEX, PSYCHOLOGICAL ABSTRACTS.

e) Social Sciences

In the case of Social Sciences the popular databases are: AMERICA; History and life; ECONOMICS ABSTRACTS INTERNATIONAL, ERIC, PROMT and SOCIALSCIEARCH and SOCIOLOGICAL ABSTRACTS.

3.5 Databases in Information services: Indian scenario

Since the past two decades, India has become active in harnessing computers for bibliographical information processing and services. With the introduction of new third generation computers in organizations like Space, Atomic energy, Industry, Electronics

etc, the importance of computer is well recognised by all sections of people in India. The national investment on Research and Development and related activities during 1986-87 has been of the order of Rs.28,656 million or about 1.10 percent of the GNP. The creation of bibliographic databases and their services is not fully developed in our country in the present day.

3.51 Objectives

The objectives for the development of databases in India are the following.[11]

i) to organize national or nationally produced information;

ii) to create databases in narrow subject areas relevant to national socio-economic situation;

iii) to develop indigenous capabilities for database creation and utilization;

iv) the databases would complement and supplement international databases; and

v) databases would serve the archival recording functions of information generated indigenously.

3.52 Development

In India the institutions like INSDOC, NASSDOC of the ICSSR are the database producers and a brief description of their activies in the field are given below:

3.521 Indian Science Abstracts (ISA)

Indian Science Abstracts started in 1965 by INSDOC. The coverage of journals has increased year after year. The table given below shows the growth rate of ISA.[12]

TABLE 2

GROWTH RATE OF INDIAN SCIENCE ABSTRACTS

Year	No. of items	No. of journals
1982-83	18,400	430
1983-84	24,519	294
1984-85	27,600	310
1985-86	40,360	N.A
1986-87	28,800	600

To develop a database for the entire documents published in India in the field of Science and Technology is really a mammoth task and therefore, for current information, an effort may be made to generate a computer readable database with an Internationally acceptable input format.

3.522 **National Union Catalogue of Scientific Serials in India (NUCSSI)**

The INSDOC, Delhi has completed the job relating to the creation of machine readable database of the National Union catalogue of scientific serials in India (NUCSSI) covering data of libraries upto 1983. This database contains about 2.6 lakhs holding data pertaining to about 35,000 records of serials (journals, proceedings, transactions, bulletins of professional bodies, universities and Government agencies etc.)

3.523 National Citation Index

National Citation Index has prepared at the National centre on Bibliometrics (NCB). In collaboration with DESIDOC and ICMR, NCB is now preparing database for about 300 Indian journal titles.

3.53 Databases in different subjects

Under the NISSAT Programme, emphasis was given to the development of the following databases in a number of subjects by the different sectoral centres. They are:

1) Central Machine Tools Institute (CMTI), Bangalore on Machine tools,
2) Central Leather Research Institute (CLRI), Madras on Leather,
3) Central Food Technology Research Institute (CFTRI), Mysore on Food,
4) Central Drugs Research Institute (CDRI), Lucknow on drug and pharmaceuticals,
5) Ahemedabad Textiles Industry Research Association (ATIRA), Ahemedbad on Textiles; and
6) National Chemical Laboratory (NCL), Pune on chemicals

3.54 Institutional databases

Several Institutions have made independent efforts to organize databases in their respective areas of interest. The National Institute of Science Technology and Development Studies (NISTADS) developed a database named CLOSS (Current Literature on Science of Science) which covers Indian literature on S&T policy studies including foundation aspects, S & T resources and practices, implementation and monitoring aspects.

Publication and Information Directorate of the Council of Scientific and Industrial Research (CSIR) in 1979 developed the Medicinal and Aromatic plants Abstracts (MAPA).

National Institute of Oceanography (NIO) data and Information centre has been generating bibliographic database called OCEANLINE. Shreemati Nathibhai Damodar Thackersey Women's University Library and Information centre developed a computerbased database 'SUCHAK' covering over 400 Indian and foreign journals and it also covers theses, conferences papers, books.

3.55 **Information services by using external databases**

In 1983, the University Grants Commission (UGC) set up at the National Centre for Science Inforamtion (NCSI) at Indian Institute of Science, Bangalore. NCSI provided SDI services, to the users based on CA, INSPEC, BIOSIS, GEOREF and MATHSFILE. The status of SDI services provided by NCSI is clear from the table.[13]

TABLE 3

STATUS OF SDI SERVICES RENDERED BY NCSI

Databases	Commencement of Services	No. of users (1988)
INSPEC	1984	822
BIOSIS	1985	2325
GEOREF	1985	369
MATHFILE	1986	391
CA	1987	438

R & D Centre on Iron and Steel (RDCIS) of Steel Authority of India Limited is running an information retrieval service based on METADEX and METERIALS business file since 1980 and 1986 respectively. For the implementation of the MEDLARS database programme in India, the NIC-ICMR centre on Biomedicals was set up. POPLINE service was also developed and this centre provided SDI as well as custom search service free fo charge. Madras University is subscribing the Cambridge Crystallographic databanks on magnetic tapes for search services to the users.

3.56 Participation of India in International database development and use

The contribution of India to International Science and Technology has been significant. India has all along been a keen participant in international activities like the UN systems. India's role is very significant in INFOTERRA/UNEP, AGRIS/FAO, INIS/IAEA. India has also been active in networks like TIPS and database ventures like FSTA. In India, it is not possible to get all the required databases on magnetic or optical media. Therefore, the users of India would need facilities to access the data centres like DIALOG, ESA and ORBIT. ESRIN/RECON on-line demonstration in 1976 in Bombay was a milestone in the history of information services in India. The Telesearch-I project at NAL, Bangalore, in 1986 was operational with the facility to access international S & T databases, held by ESA/IRS at ESRIN via land and satellite dedicated lines. In 1988 Telesearch-II became operatioal underwhich DIALOG is accessed on-line. ICRISAT, BHEL, Hyderabad, NAL, Bangalore, RRL Trivandrum etc are the centres where on-line system is operational.

The project 'Aristotle' by Videsh Sanchar Nigam Ltd Bombay, is an important step to promote and develop on-line systems and service facilities in India and this programme envisages creation, marketing of Indian databases, easy access to international databases. The three important general network services are NICNET, INDONET and VIKRAM and some of the other specialised information net works are CALIBNET, DELNET, DESINET etc.

India started the storing of databases on magnetic media way-back in 1978. In a developing country like India, databases on CD-ROM has very significant use. INSDOC has started subscribing Science Citation Index on CD-ROM since 1988. NIO has received Aquatic Sciences and fisheries abstracts databases on CD-ROM. Information centre at NAL Bangalore in 1988 and this centre is getting LISA on CD-ROM. A combination of CD-ROM and on-line system facility could be more appropriate choice for India.

In Kerala too, computers are being used in some of the research libraries like Regional Research Laboratory (RRL) Trivandrum, Sri. Chitra Tirunal Institute of Medical Sciences, Trivandrum, Vikram Sarabhai Space Centre (VSSC), Trivandrum, National Physical Oceanographic Laboratory, Cochin, Central Institue of Fisheries and Technology, Cochin and Kerala Forest Research Institute, Peechi in a modest way.[14] These centres have created in house databases for information storage and retrival.

3.6 Cost

The number of bibliographic databases available for on-line searching has increased considerably. The costs incured for search

services are split into capital or setting up costs and running costs.[15] The capital or system costs include:

a) Purchase of terminal

b) acquiring a telephone and either an acoustic coupler or modem. These costs vary depending upon local PTT or telephone supplier.

c) the subscription charges to on-line search services

d) training courses, instruction manuals and other relevant literature.

The direct cost comprises the following:

a) telecommunication cost and these vary considerably depending on the country, telecommunications networks used, distance from thenearest node of the network and the time of day.

b) search service costs: The charges made by the search services consists of a connection charge which varies according to the distance used, and a charge for printing offline and sometimes displaying on-line, retrieved references. The database connection charge varies greatly with some proportion usually passed on to the database producer as a royalty fee. For example, the range on DIALOG is from §25 per hour for ERIC to $300 per hour for IFI/Plenum (chemical and chemically related patents). The costs vary from database to database. A comparative study of the different charges made by DIALOG and ESA-IRS for using five databases are shown in the table.

TABLE 4

DATABASES AND PRINT CHARGES

ABI/INRORM			CAB		CAS		COMPENDEX		INSPEC	
	DIALOG £	ESA/ £	DIA £	ESA £	DIA £	ESA £	DIA £	ESA £	DIA £	ESA £
Access	48.6	37.28	33.31	27.49	42.62	35.05	53.28	47.85	49.95	39.51
Online print	0.13	0.09	0.17	0.12	0.07	0.06	0.13	0.13	0.10	0.09
Offline print	0.20	0.19	0.20	0.22	0.13	0.15	0.20	0.20	0.17	0.19

The direct cost therefore of carrying out a search on CAS database on ESA/IRS from UK via Euronet, which took 15 minutes and involved references being displayed on-line and 30 references printed off-line would be.[16]

	£
Telephone network (local, peak rate)	1.15
Database access	8.76
Onlne prints	0.61
offline prints	4.38
TTotal	£ 14.90

Thus it is seen that £1 per minute may be sued as the direct cost for carrying out an on-line search.

DIALOG and SDC charges are based on actual use with large volume discounts, while BRS, has a subscription plan (a certian number of hours purchased for the year at a fixed amount) Each has its own method to charge the high-use subscribers at a lower rate.

The cost of page or citation charges, royality charges vary according to vendors and databases. The most commonly used telecommunication networks are TELENT and TYMNET and the charges vary from vendor to vendor.

The three major vendor's namely DIALOG, BRS and SDC systems per hour charges in the U.S. are as.[17]

	DIALOG	BRS	SDC
TYMNET	$ 8.00	$ 7.00	$ 8.00
TELENET	5.0	7.0	8.00

Stored search charges and SDI service charges also differ from vendors to vendors.

There is a vast difference in pricing levels between private databases and government produced or subsidized databases. The price levels on DIALOG vary greatly. The connect hour prices range any where from US$ 300 to US $25.00 (excluding the ON tap files or DIALOG produced files).[18]

In India during 1987 at Hyderabad the Technical Information Centre and R & D division of BHEL had made a telex access of 25 database searches through DIALOG. Connect-time cost varies from data base to database and is charged for the time that user terminal is actually connected to DIALOG host. The telecommunication cost in India using the International telex network is Rs.28.00 per minute and is calculated from the time the New York Gate way is connected till the telex machine is manually disconnected after the search is over.[19] The average total cost for their searches is calculated and it comes to about Rs. 860/- of the

Fig 8. Database bibliographic records by main subjects

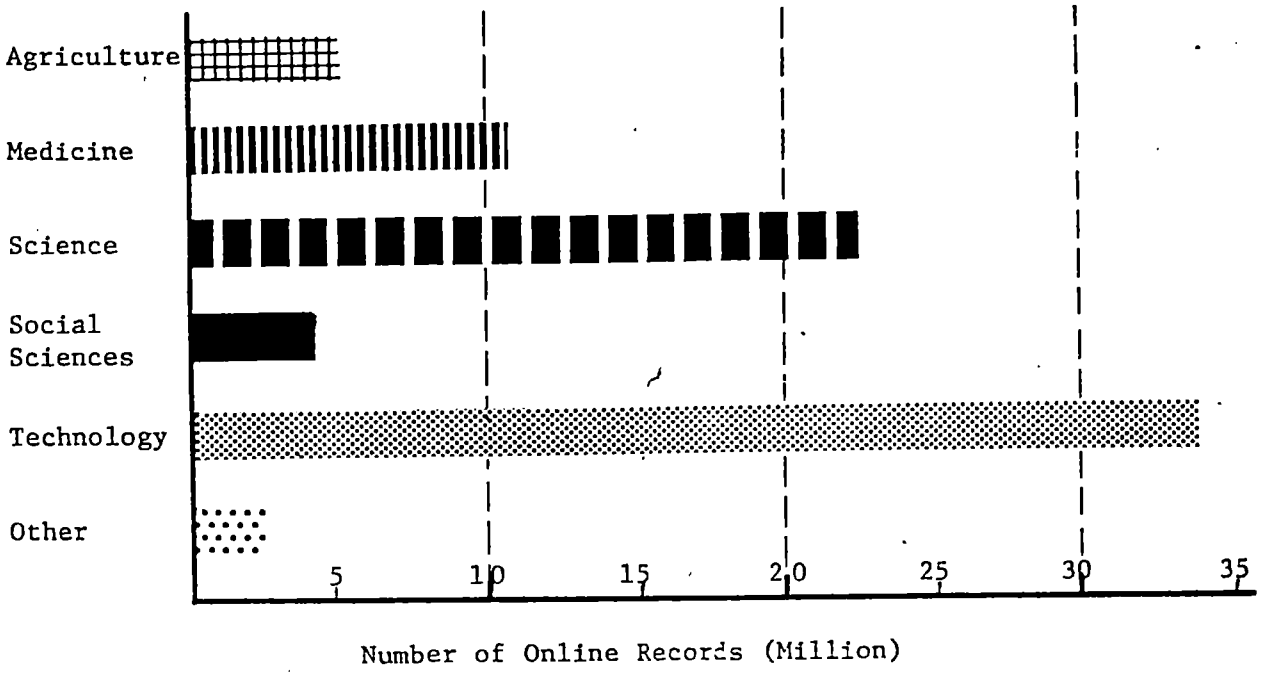
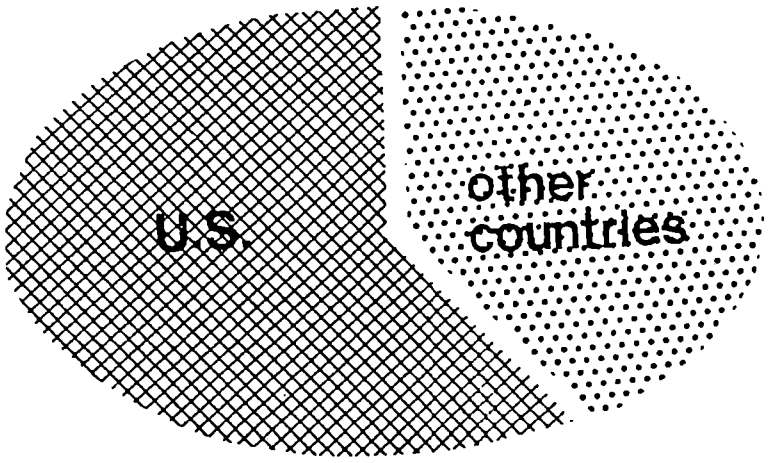


Fig. 9 Distribution of Online database supliers by country of origin



costs, the connect time and out put cost is to be paid in foreign currencies, while telex costs are paid in Indian rupees.

3.7 Trend

Databases of scientific and technological literature are the largest and long established system in the developed countries. Majority of the databases in scientific and technical field are reference databases. The number, varieity and scope of bibliographic databases grew rapidly. By 1973, there were at least 81 machine readable bibliographic databases available commercially and by early 1978, there were more than 360.[20] New ones continue to make their debut at a healthy pace.

Hall and Brown estimate that in 1968 there were less than a quarter million bibliographic records extant. By 1972, they were 3.0 millions and by 1976, 24 million. They also estimate that in 1980 there were no fewer than 75 million records. Out of this, 34 million are related to Applied science, 22.8 million to pure science, and 10.8 to medicine, 5.0 and 4.2 million records are available on agriculture and social sciences respectively and this distribution pattern is shown in the Figure (8) . The 75 million publicly available records are contained in over 600 different databases.[21] The great majority of these databases came from American suppliers and the figures (9) indicate the situation.

The database usage is much higher in USA than in Europe and database service is oriented towards the needs of commercial sector. In USA than in Europe and database service is oriented towards the needs of commercial sector. In USA the database industry is largely in the private sector, where as in Europe most of the information activities are provided by public sector. A major factor to the US domination of the world database market is the super telecommunication system.[22]

Another trend is that, the database vendors are expanding the range of service types on offer whilst search and information retrieval continues to be the major service, vendors are increasingly selling related software products, electronic mail, information processing and expert systems.

During 1987, 15 new gateway services were established bringing the total to 59. New gateways added in 1987 include CA on line in Canada, Inet America. Intelligent Interface Facility known as IIF and INFOTAP in Western Europe and CIIRS INTERNATIONAL, the first major Australian gateway to provide access to International on-line services are also established.[23]

The 'Cuadara Directory of on-line databases 1988' shows that there are 3135 entries providing upto data descriptions on a total of 3699 databases and they are available through on or more of the 555 world-wide online services.[24] The over all growth in the on-line databases industry over the past eight years is shown in the table below:

TABLE 5

GROWTH IN THE ON-LINE DATABASES

Directory Issue	No. of databases	No. of databank producers	No. of online services	No. of Gateways
1979/80	400	221	59	-
1980/81	600	340	93	-
1981/82	966	512	170	-
1982/83	1350	718	213	-
1983/84	1878	927	272	-
1984/85	2453	1189	362	-
1986	2901	1379	454	35
1987	3369	1568	528	44
1988	3699	1685	555	59

New media developments such as CD-ROM are likely to secure a niche within the database market, in the case of distributed databases than to challenge on-line information in a fundamental way. It should also be noted that distributed databases do not reduce the need for sophisticated user friendly software products.

3.8 Conclusion

New approaches in information transfer by on-line method and development of new databases are significant developments of the time. The communication technology with computer technology revolutionized the field of information retrieval by using databases and by utilising various database services.

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Chapter IV

LITERATURE ON COMPUTER-BASED BIBLIOGRAPHIC DATABASES: A STATISTICAL ANALYSIS

4.0 Introduction

The study of Bibliographic databases has attracted more Information Scientists to the field. A number of studies are in progress in the field of bibliographic databases and the results of a number of studies conducted are published as articles in various journals. This chapter gives a statistical analysis of the literature collected on bibliographic databases. The total number of microdocuments collected is 229. For the statistical analysis of the data variables like frequency of journals, year, country, subject, author etc. are considered.

4.1 Periodical-wise distribution

The total number of microdocuments selected for the study is 229. These are published in a number of periodicals in the field of study during 1982-1986. Various aspects of the bibliographic databases have been reported and discussed in a large number of microdocuments. Based on the distribution of these articles in different journals a rank list is prepared in order to identify the core jounals in the subject. A rank list of first 30 journals is given in the Table below: (Table 6).

TABLE 6. RANKED LIST OF PERIODICALS ON COMPUTERS BASED BIBLIOGRAPHIC DATABASES

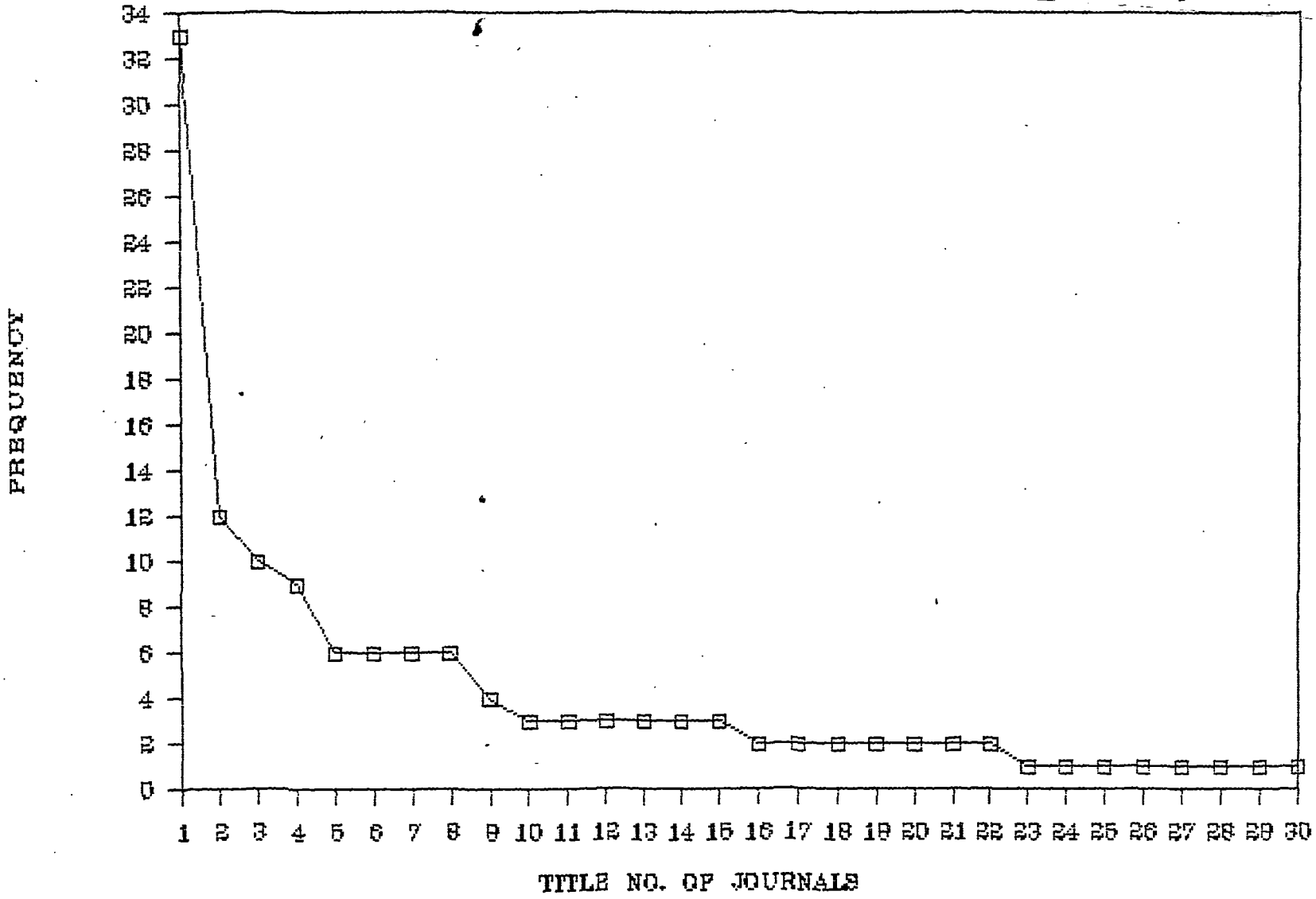
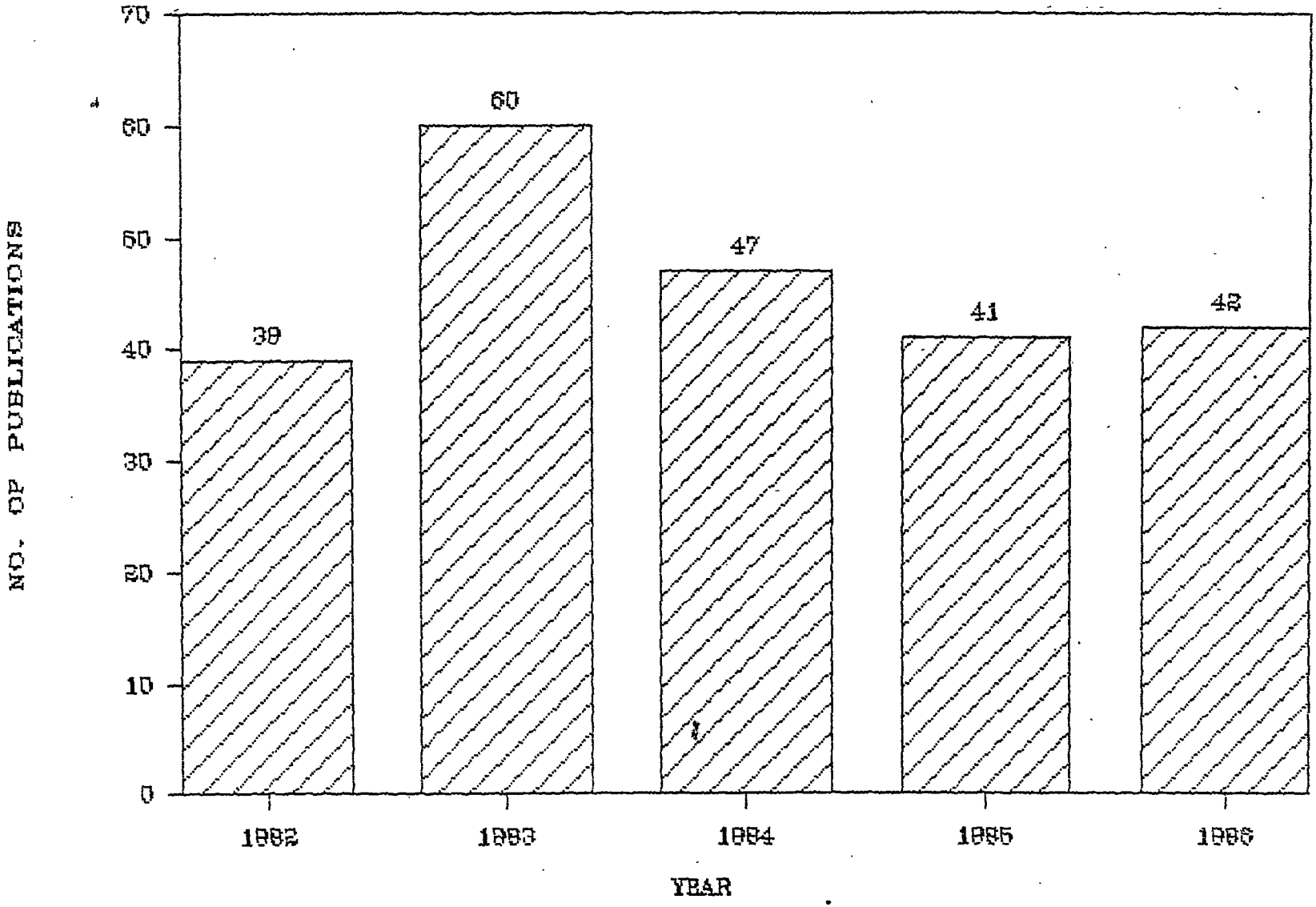


Table 6: Ranked list of periodicals on computer-based bibliographic databases.

Sl.No.	Title of Journal	Frequency	Rank No.
1.	Database	33	I
2.	On-line	12	II
3.	On-line Review	10	III
4.	Journal of chemical information and computer science	9	IV
5.	Journal of the American Society for Information Science	6	V
6.	Library Journal	6	V
7.	Bulletin of Medical Library Association	6	V
8.	World patent information	6	V
9.	LAISE	4	VI
10.	Journal of Information Science	3	VII
11.	Inspel	3	VII
12.	Information Service and Use	3	VII
13.	Medical reference service quarterly	3	VII
14.	Information technology and libraries	3	VII
15.	Online user group newsletter	3	VII
16.	Legal Reference Service quarterly	2	VIII
17.	African Research and Documentation	2	VIII
18.	Information processing and management	2	VIII
19.	Library Hi Tech	2	VIII
20.	Rilisar bulletin	2	VIII

Table contd.....

TABLE 8. YEAR-WISE DISTRIBUTION OF LITERATURE ON COMPUTER BASED BIBLIOGRAPHIC DATABASES



21.	Special libraries	2	VIII
22.	Quarterly bulletin of IAALD	2	VIII
23.	International library review	1	IX
24.	Electronics Library	1	IX
25.	Microcomputers in libraries	1	IX
26.	Libri	1	IX
27.	Law library journal	1	IX
28.	Library trends	1	IX
29.	International library movement	1	IX
30.	Australian special library news	1	IX

In the table above, titles are arranged in the descending order of frequency. This list indicates the core and peripheral periodicals on bibliographic databases. From the table above, it is clear that the most productive journal in the field of study is 'Database'. The second position goes to 'On-line'. The third and fourth positions go to 'On-line Review' and 'Journal of Chemical Information and computer science' respectively. Out of the ranked journals Indian journals ranked are 'Rilisar bulletin' and 'International Library Movement' and these are placed respectively in the 20th and 29th position.

4.2 Country-wise distribution

The analysis of articles during the study period 1982-1986 revealed that USA has published the majority (73.79%) of the articles in the field of study. USA has 169 publications, the

second position goes to UK with 24 (10.48%), Australia with 6 (2.2%) comes third. Japan, Africa, Netherlands comes fourth with 3 publications each and India with 2 in the fifth position and other countries constitute the rest of 19 publications. The table (Table No. 7) shows the country-wise distribution of publications.

Table 7: Country-wise distribution of publications

Country	No. of publications	Percentage
USA	169	73.8
UK	24	10.5
Australia	6	2.6
Japan	3	1.3
Netherlands	3	1.3
Africa	3	1.3
India	2	0.9
Others	19	8.3

4.3 Year-wise distribution

A year-wise distribution of the literature is estimated. It is given in the table (Table No.8)

TABLE 7. COUNTRY-WISE DISTRIBUTION OF PUBLICATIONS

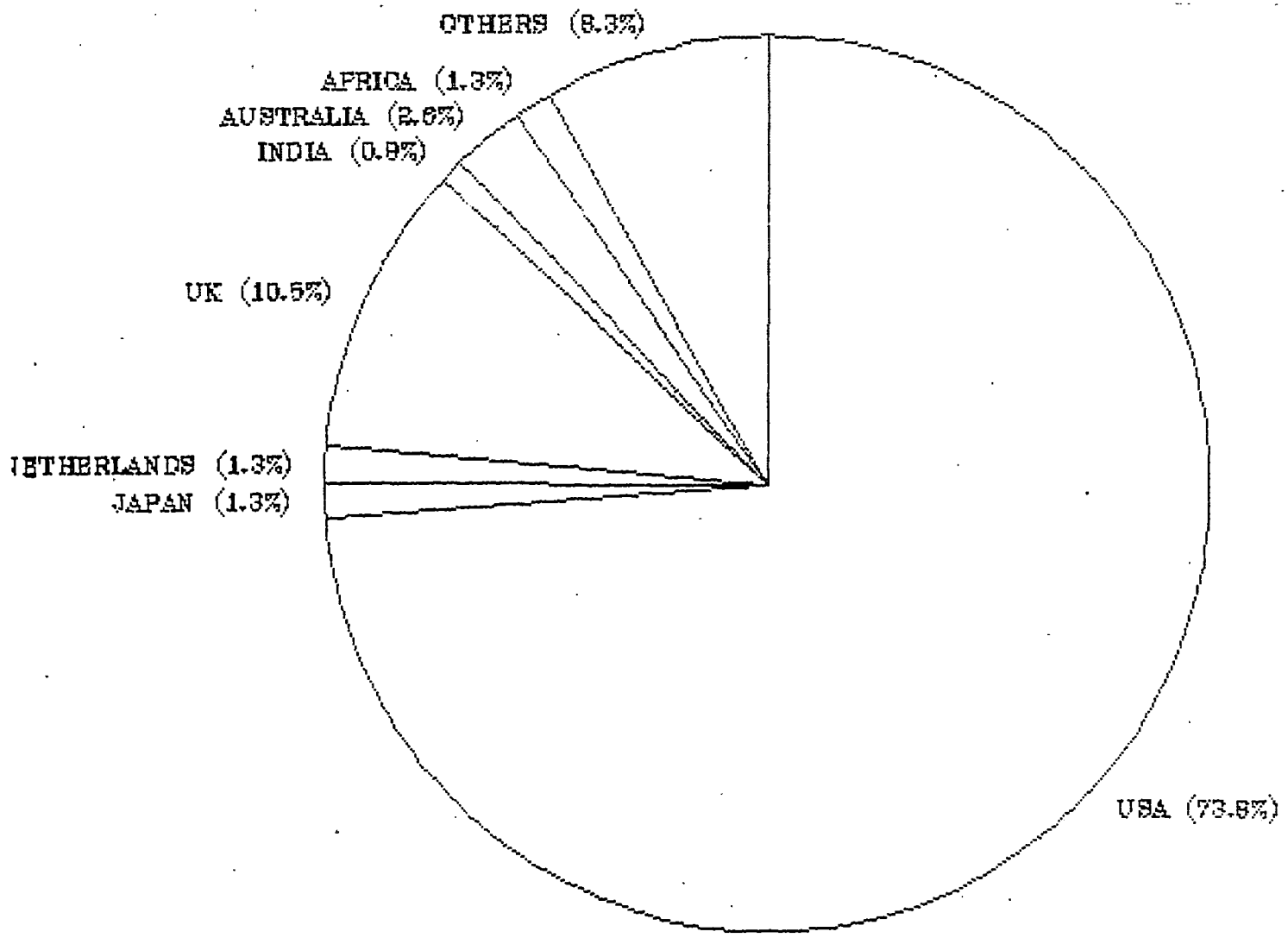


Table 8: Year-wise distribution of literature

Year	No. of publications	Percentage
1982	39	17.0
1983	60	26.2
1984	47	20.5
1985	41	17.9
1986	42	18.3

The above table indicates that out of the literature published during 1982-86, the majority (26.2%) of the articles were published during 1983 ie. 60. During 1984, 1985 and 1986 it gradually decreases.

4.4 Subject-wise distribution

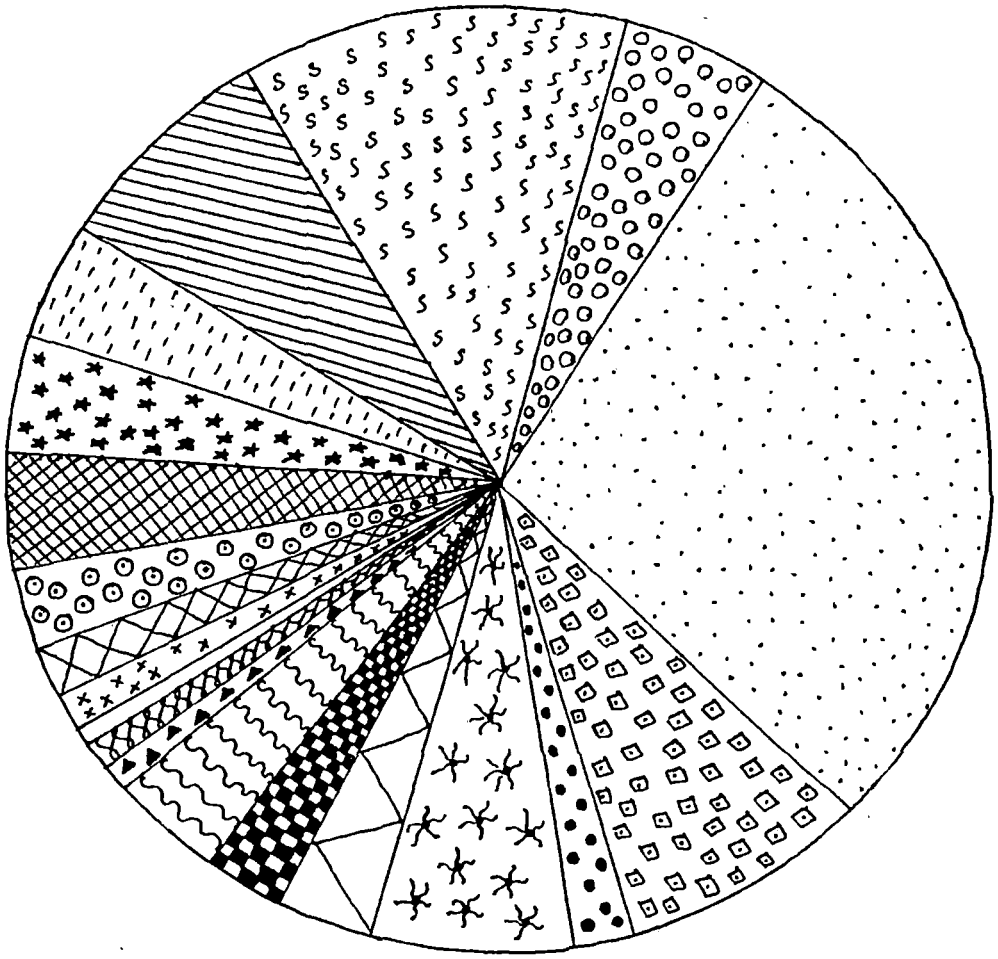
In order to find out the subject-wise distribution, the collected data has been divided into 19 subdivisions. It is given in the table (Table No.9) below:

Table 9: Subject-wise distribution of literature on computer-based bibliographic databases.

Divisions	No. of studies	Percentage
General	6	2.62
Bibliographic Record Formats	7	3.05
Country-wise distribution of Information Services and databases	15	6.55
Database Management System	4	1.74
Databases: Selection of hosts and vendors	19	8.29

Table contd...

TABLE 9. SUBJECT-WISE DISTRIBUTION OF LITERATURE ON COMPUTER-BASED BIBLIOGRAPHIC DATABASES



2.62	4.80	2.62
3.05	12.66	1.74
6.55	7.42	1.31
1.74	3.93	0.43
8.29	3.93	0.87
28.38	3.93	0.87
		4.80

Databases in General and Science and Technology	65	28.38
Databases in Humanities	11	4.80
Databases in Social Sciences	29	12.66
Databases by type of source documents	17	7.42
Expert Systems	9	3.93
User Education	9	3.93
Search Strategy	9	3.93
Downloading	6	2.62
Storage Media	4	1.74
Cost	3	1.31
Man-machine interface	1	0.43
Document delivery	2	0.87
Evaluation	11	4.80

The table (Table No.9) shows that, out of the total studies conducted the maximum number of studies (28.38%) are in the field of science and technology databases. The next position goes to social sciences databases (12.66%). Out of the Science and Technology database studies the maximum (17 studies) are in the field of Medicine and studies on Chemistry (15 studies) comes next position. Other studies like Expert Systems, User education, Downloading, Storage Media and Evaluation etc are less in number. However, quite a good number of studies are conducted on evaluation of databases.

4.5 Author-wise distribution

An attempt is also made to understand the most productive aurthors in the field of study. The data shows that the most productive author in the field is Carol Tenopir. The second position goes to Dueltgen Ronald.

4.6 Conclusion

By the statistical analysis of the literature on 'computer-based bobliographic databases', we can conclude that the growth of literature is maximum during 1983, the most productive journal is 'Database'. The majority of the publications are emanated from the U.S.A., the majority of the studies are on Science and Technology databases and the most productive author is Carol Tenopir in the field of subject.

Chapter V

COMPUTER-BASED BIBLIOGRAPHIC DATABASES IN INFORMATION RETRIEVAL: THE TREND REPORT

The main objective of the study is to prepare a trend report on computer-based bibliographic databases in information retrieval; 1982-1986. On the basis of the data collected, a systematic analysis is carried out in the field of study under the following subject divisions:

A General

B Bibliographic Record Formats

C Country-wise distribution of Information services and Databases.

D Database Management System

E Database: Selection of Hosts and vendors

F Databases in General, Science and Technology

G Databases in Humanities

H Databases in Social Sciences

I Database by type of source documents

J Expert systems

K User education

L Search strategy

M Downloading

N Storage Media

O Cost

P Man-machine Interface

Q Document Delivery

R Copyright Issues

S Evaluation

A GENERAL

The emergence of databases represent a shift from providing a physical entity, a book or an article to the more abstract concept of providing or transfering information bibliographic databases are established by the libraries mainly for individual library aims such as stocklist, item retrieval, information retrieval, loan control, acquisition control and for group aims such as union list, sharing bibliographic data, rationalising collection building, sharing information resources etc. (A-1/1982). Database proliferation presents many problems to librarians including the choice of system of searching duplicated database. But the on-line database services have received many organisations the necessity and expense of maintaining local database and additionally provide access to fringe materials (A-2/1983). Now on-line systems are becoming more user friendly. The number of users to on-line databases have also increased. So there is a trend towards providing databases for everyone ie, which are suitable for scientists or laymen. (A-3/1983). The publishing and users are both experiencing change and database producers and information workers must forget their differences and conflicts in aims and develop repackaged information service to provide optimum service at reasonable cost (A-4/1983). With the growth of on-line services aimed at the public in U.S.A. many popular magazines are telling public about this. Man articles give a false impression in this aspect (A-5/1984). National Federation of Abstrating and Indexing Services (NFAIS) in 1982 has conducted a study to identify access alternatives which have been evaluated and selected by database producers in making their database

available to users. The producers showed a preference for online database through commercial database utility and in-house sale of tapes directly to user organisations. (A-6/1982)

B BIBLIOGRAPHIC RECORD FORMATS

The US MARC Archival and Manuscripts Control (AMC) format provides Archivists with the means to communicate and exchange information about holdings in machine readable form. The author gives a brief history of the US MARC formats developed by the Library of Congress for bibliographic data and authority records and outlines the basic structure of a MARC recod for the exchange of bibliographic information and in the growth of bibliographic utilities US MARC formats have played a vital role (B-7/1986).

At the National online meeting at New York in 1986 Malayshev explained that the Pikes Peak Library District (PPLD), USA acquired a new computer system and the system included Tandem hardware and software developed by Colarado Alliance of Research Libraries (CARL). The CARL public Access Catalogue was chosen as a suitable file design for PLLD'S long established and heavily used community databases and also describes the process by which the databases were converted to fit the CARL System aid the MARC record (B-8/1986). Although MARC formats are well established around the world, the Common Communication Format (CCF) is also employed as a standard on which bibliographical systems are based. CCF differs from MARC by specifying no rules for description, permitting minimal records and introducing the group of fields called

segments. CCF records permit specific kind of relationships to exist between fields, group of fields, and records. CCF forms the basis for general new formats used in Europe and North South America. (B-9/1986).

The British Library (BL) UK MARC databases, in US MARC format is now available from the Library of Congress (LC) through the cataloguing distribution service tape service. OCLC has been licensed by the BL to receive these converted records from LC and offer them to their 6,000 member libraries. ULTAS (University of Toronto Library Association receive the UK MARC format from the National Library of Canada. (B-10/1985).

Reed Dale describes the RLIN Archives and Manuscript control project in the context of establishing archival data standards and exploring the extent to which the vast amount of work already done in library data standardization might be adopted to archival ends, incidentally preparing the way for an integrated library/archival information system with a common database (B-11/1985). For storing the information the catalogue fields are expanded upto 88 fields. There is no need for any fixed serial order for arranging the field in computer application process. Envergy database can re-arrange this order, based on its own logical sequence. The serial order of the National Database division of SANCST, Saudi Arabia had been taken a a model for direct catalogue entry in computer for any bibliographic database (B-12/1985). CCF is a model for structuring messages and evolved from various international efforts to structure the bibliographic data so that it can be communicated or exchanged with other organisations Open-Systems

Interconnections (OSI) is a model for communicating messages and related standards for the exchange of information among terminals, computers, people, networks and processes. The work has been directed by International Standards Organisation (ISO) International Telegraph and Telephone Consultant Committe and National Standards Orgnaisation (B-13/1983).

C COUNTRY-WISE DISTRIBUTION OF INFORMATION SERVICES AND DATABASES

Japan

Advances in computer technology and data communication brought about major changes in the information services of libraries. In Japan, on-line network systems among libraries became prevalent. The three major Japanese bibliographic databases services are JAPAN/MARC, PRIVATE SECTOR MARC and database of the National centre for Science Information Systems (SIS). The author also examined the library automation and bibliographic information on-line services (C-14/1986).

At the Kanazawa Institute of Technology (KIT) Japan, developed a prototype system to manage catalogue records of Arabic materials in computerised form. The study describes an information retrieval experiment involving a small Arabic database. The experiment demonstrates the possibility of using the system as the technical basis for developing internaional bibliographic information systems capable of integrating textual materials of various languages (C-15/1986).

The database service market in Japan strongly dependent on foreign services particularly by DIALOG and the market is widened drastically in

a couple of years and enlarged its service area in 1982. The needs for database services also upsurged. Taking into account of the new waves described current trends of database services use based mainly on the result of a survey and shows popular systems, and databases, use frequency of the system carrier of searchers, search time at terminal search cost and changing procedures (C-16/1982).

United Kingdom

The pattern of on-line market in the U.K. the attitudes and marketing practices of a selection of UK database producers based on a survey points out that the online market is by no means stable and that the alternative forms of electronic media are evolving which may led to significant changes in the information industry with the consequent reorientation of marketing methods (C-17/1986).

The on-line access to international databases and the role in information provision in on-line searching could ease some of the problems of information access in Trinidad and Tobago. The cost factors are examined in the light of public Data Network in Trinidad and Tobago service development locally to enhance the benefit of on-line access to databases (C-18/1986).

Australia

BISA (Bibliographic Information on South East Asia) is a project developed at the Sydney University Australia. BISA is an on-line bibliographic dattabase with over 20,000 term available worlwide. BISA's principal activities are construction of the specialised database, development of internaltonal standards for South East Asian material and

training of South East Asian libraries in using computers and international cataloguing standards (C-19/1984).

Database development in Australia began five years ago with the establishment of AUSINET (Australian Information Network) and MEDLINE and the link through MIDAS (Multi-mode International Data Acquistion Service) to overseas systems. Local databases were relevant because of uniqueness of contents and appropriateness to domestic research. Coverage of Australian Information in overseas databases were selective. A survey conducted by Australian Database Development Association (ADDA) indicated that 65 public databases available through seven vendors, and there are twenty four bibliographic databases also. Public sector in Australia dominates private and industrial sectors in the production of database services (C-20/1984).

The study provides the activities of the Central Information Library and Editorial Section (CILES) CSIRO, Melbourne, Australia in the field of bibliographic databases from 1967 onwards. In the early 1970's development of the CILES Generalised File Management System (GFMS) commenced. Over 50 bibliographic databases have been produced using the GFMS software (C-21/1983).

Africa

The searching of bibliographical databases to retrieve bibliographical information is becoming an increasingly common in research practice for the African studies, there is currently no single comprehensive database covering the literature from the continent on a multidisciplinairy basis but there are a number of existing databases serve as a useful and upto date bibliographical tool (C-22/1986).

At the conference of Library material Annual General Meeting held at 1986 described the plan of the centre for Southern African studies Information Data base (SASD) as a research source with the aim of providing a comprehensive on-line bibliographical services on South Africa with its own treasures (C-23/1986).

United Nations

The contribution of United Nations Agency to the database is the co-operation between United Nations member states and International Organizations has led to the development of several specialised, decentralised international information systems of which INIS (International Nuclear Information System) and AGRIS are the two largest. The UN Agencies also collect information for the creation of centralised printed and computer readable databases. LABORDOC is a centralised database produced by the ILO Library and Central Documentation Branch. CIS is a specialised database produced by the International Occupational Safety and Health Information Centre with the co-operation of National Institutions. The international Labour Information system (ILIS) by ILO is able to link in numerous existing specialised and general informaiton services and thus providing easy access to the information by a wide variety of users (C-24/1986). During the 1980s there has been considerable effort from the Government of Italay to establish an Italian Industry of Information on-line (C-25/1984). Developing countries are facing many problems in computer searches. Good use of computer searches is part of library literacy which stimulates people to continue their education throughout their lives and will enable them to function better in the future. Europe is lagging behind in Information Technology (IT) stills. They have newly formed a Con-

federation of Information Communication Industries to improve the situation (C-26/1984). The interest shown by Information companies, Government and the Universities had aided in the development of bibliographic database in Chile and also discusses the advantages of on-line information storage and retrieval systems. Chilean databases provide the best coverage of Latin American Scientific and technical informatio(C-27/1982).

United States of America

Maratha William made a statistical study for highlighting the online database field, described that during 1982, 73 new databases were offered on-line through seven major vendors in USA and also discussed the advent of downloading with its implications. Considers the use of microcomputers especially PC used in the home to access databases. Mentions about the facility available through BRS/AFER DARK and DIALOG'S. Knowledge Index which are available out of office hours at a cheap rate (C-28/1983).

D DATABASE MANAGEMENT SYSTEM

Relatively little microcomputer software has been designed specifically for the storage and retrieval of bibliographic data Information retrieval packages for mainframes and minicomputers have scaled down to run on microcomputers, but these programes are expensive, unwwidely and inflexible. For this microcomputer database management systems are often used an alternative. Discussed the criteria for evaluating DBMS used for storage and retrieval of bibliographic data (D-29/1986).

DataBase Management Systems (DBMS) are being applied to bibliographic databases with increasing frequency because of their ready

availability. DBMS query languages tend to be very powerful, they are far too complex for the casual user. A Portable Self-contained Intermediary (PSI) is an existing system intermediary for document retrieval systems, be extended to include access to DBMS containing bibliographic data in order to circumvent the complexity problem for the casual user (D-30/1985).

An in-depth study at the DBMS by Daehn is presented which covers a range of topics including data entry, information retrieval security, DBMS software and downloading of literature search results (D-31/1985).

The potential of DBMS describes the use at Philadelphia College of Textiles and Science of microcomputer programme for serials. These are a File Manager PFS, and a relational Database Management Systems dBase II, PFS on an Apple II+ has been used for a serials holding list. dBase II is iused for serials management (D-32/1984).

E DATABASE: SELECTION OF HOSTS AND VENDORS

The study pointed out that the last ten years has witnessed a major growth in the on-line information retrieval business. This growth has been reflected in numbers of on-line databases available and in the numbers of host computer services. Rapid increase in the number of new organisations offering on-line information to a multitude of audience presents new challenges to the database publisher. The challenges are (1) The problem of defining the market for specified on-line product (2) Determinaiton of how to make the database usable by the market place (3) Training the user on specific systems and (4) offering high quality

customer service support is critical to the success of offering databases on new systems.

Pergamon Infoline has made no attempt to become a supermarket host. Rather, it has adopted the 'boutique' approach of specialising in certian subject areas such as patents, business information, polymers, and water information. Infoline's experience as a 'boutique' host are examined and the future of 'supermarket' and 'boutique' host is considered in the light of developments in new technology. The development in microcomputer, software, user friendly systems, expert systems, mass storage and telecommunications will be examined and the impact on the host computer business and on the searcher will be considered (E-33/1986).

Nearly sixty new business related databases added to DIALOG. To encourage the business user DIALOG has developed the DIALOG business connection (DBC) a user-fredly menu driven interface to 24 key business databases (E-34/1986).

DIALOG Southwest US region, traces the roots of Dialog Infomation Services. The recent developments like DIALOG Version and DIALNET enhancements, report feature, gateway services and menudriven files are described. It is expected that future developments to include access to Electronic Mail Service, more full text files, personal computer software packages for telecommunications and more new databases (E-35/1985).

BRS/Saunders COLLEAGUE is a biomedical information retrieval system designed to meet the needs of health care professional by making available specialised medical databases and other on-line services. It offers two groups of database, bibliographic reference databases, and

databases to the full text medical books, journals, handbooks and manuals (E-36/1985). Schulman discusses that Pergamen - Infoline acts as both database producers and vendors as well as producing traditional hard copy and also examines the exclusive distribution agreements (E-37/1985).

For selecting a host system suggestions are given; It is worth considering the charges, using files split by date if period is known, checking SDI facilities and whether abstracts are available (E-38/1985).

The Institute of Scientific Information (ISI) search network announced the withdrawal of the ISI search network in Feb. 1984. This bibliographic systems are unlikely to be displaced by new on-line systems, but there is room for other systems if they offer access to unique information at a reasonable price. (E-39/1984). The database publisher in the future will be forced to offer the new expertise to meet the challenges (E-40/1984).

By the last half of 1984 Wilson & Co. have changed BEACON into a new on-line information retrieval system. WILSONLINE, Logicon Inc, were contracted to automate Wilson's indexing services and create an on-line system using MEDLARS software purchased from NLM (E-41/1984).

A survey undertaken in 1981 indicated that only 11 organisations in South Africa were using overseas vendors at that time, with 90% of usage split between just two vendors, DIALOG and NLM with DIALOG accounting for 72.79% of total use. A follow up survey in 1983 of known users endeavoured to establish the reasons for choosing the respondent's most used vendor (E-42/1984).

The development of the INSPEC database for on-line application is used as the basis for discussion of some of the major policy considerations. These include systems of indexing and other access points,

the choice of on-line service provider the allocation of database costs between on-line services and printed products, pricing, downloading and training. The impact of developments such as searching by end-users, electronic publishing and full text database is also briefly examined (E-43/1984).

The position of the American Institute of Physics as both primary journal publisher and secondary information database producer creates opportunities for important savings through multiple use of original input material. The system by which both primary periodicals and secondary services are produced inorder to release these savings (E-44/1984).

Dolan presents some guide lines for selecting an appropriate database from those offered on BRS/AFTER DARK with the range of AFTER DARK database, analysis their suitability for their anticipated audience and gives general search hints only a handful of databases are suitable for the general public in their entirety. Factors making a database a good fit for an enduser requirement include match on subject of interest and the inclusion of full texts or abstracts (E-45/1984).

Since May 1981, MEDLINE has been offered by three vendors. Bibliographic Retrieval Services, DIALOG and NLM although the contents of these MEDLINE files are basically the same, they have major differences. On-line versus off line coverage, costs, hours software capabilities and bibliographic variations (E-46/1983).

A project known as BEACON is undertaken by HW Wilson & Co. to automate the production of 26 indexes and catalogues. The first publication using automated system was the October 1982 issue of Cumulative Book Index. Business periodicals Index and Reader's guide to periodical literature are automated from beginning of 1983 (E-47/1983).

Focuses on the increasing number of business and management data bases available on Bibliographic Retrieval Services (BRS) and divides them into three levels according to focus and content. Major business databases are ABI/INFORM, MANAGEMENT content, PROMT and HARFAX. BRS is one of the prime sources of current international business literature (E-48/1982). Janet Egeland points out the advantages to libraries, of the use of networrk such as Bibliographic Retrieval Service (BRS) which provide low on-line access rates and cut administrative costs. BRS gives its members access to a common store of knowledge, allows them to communicate among themselves using the BRS on-line message switching system and enables them to actively contribute to the development of the system through the BRS user committees (E-49/1982).

A short review of the services offered by BRS is given over 50 databases are available including widely used databases like ERIC and NTIS as well as some less easily available ones such as Exceptional Child Educational Resources. The command language is similar to ORBIT and DIALOG. BRS offers an electronic message switching system and a private database service and also facilities for producing catalogue records to provide on-line catalogues or COM on cards (E-50/1982).

Five UK public libraries received grants form the British Library Research and Development to experiment with the use of on-line searchsuch as BLAISE, ESA-IRS, DIALOG and SDC in their libraries (E-51/1982).

F DATABASES : IN GENERAL, SCIENCE AND TECHNOLOGY

General

The subject coverage of bibligraphical databases are expanding increasingly. The latest technological developments in coverage is the

inclusion of material of interest to the ordinary citizen, not just the researcher or the businessman. The coverage is spreading in the areas of human needs, child care, drugs, environment, energy, humanities and other practical subjcts. KNOWLEDGE INDEX, offered by DIALOG is a low cost on-line information service aimed at home owners of personal computers. Eventhough, KNOWLEDGE INDEX lacks flexibility and the power of DIALOG, the customer support is good and it has advantage for running low cost searches ion topics of personal interest (F-52/1985).

Databases: Current affairs

On-line news retrieval services have undergone rapid evolution. Public awareness of microcomputer based srvices available homes and offices has increased tremendously. BRS and DIALOG have segmented their products to include separate access to indexing of current event topics. Additional databases have been introduced to cater specialised audiences. (F-53/1984).

Databases: Conferences

The EDVENT database was developed by Time Place Inc, as a computerised directory of public seminars, conferences and is based on a years experience of EDVENT by the Americal Society for Training and Development and the coverage is strong on range of topics, but less so on depth. The command language seems to be inadequate when compared with mature databases (F-54/1986).

Databases: Science and Technology

According to Caudra's Directory of on-line databases, databases can be grouped into six categories. They are the Reference databases which incorporate bibliographic and referal databases and Source databases which

include full text, software, textual numeric (F-55/1985). The popular major databases giving access to historical and bibliographical information in sciences include HISLINE, America: History and Life, AGICOLA, BIOSISPREVIEW, CA CONDENSATES, COMPENDEX, EXCERPTA, MEDILINE, INSPEC etc. Here very specific researches will not give a high yield and broader searches should be preferred (F-56/1983).

Atkinson and Dolan in 1983 identifies the difficulties, presented by the user request only those materials which are of research-oriented nature the pitfalls in retrieving 'research studies' and suggest approach to the problems. The five major databases selected for closer study are NCMH (National Clearing House for Mental Health), BIOSIS, ERIC, MEDILINE AND PSYCHINFO (F-57/1983).

Databases: Statistics

The aim of database, like COMPENDEX, MATHSCI and NTIS is to direct the searcher to a number of appropriate sources of statistical information and also give a general background to the requirement for statistical technique (F-58/1986).

Databases: Energy

Some of the advancements in energy technology can be directly attributed to the use of energy information systems and improved decision making. The energy mission-oriented information systems which havegrown at discipline, local Government, federal and state level because of the energy crisis of the early 1970s. The accessing of energy information through directories and cross examining of data bases with user aids and materials (F-59/1983). The Energy Bibliography and Index database

(EBIB) available through SDC. EBIB file covers a large percentage of the energy related material held in the, Texas A & M University Library, a major world energy collection (F-60/1982).

Databases: NuclearEnergy

Information Specialists at Westing House Water Reactor Divisions, Pennsylvania were faced with the need to select the most critical technical nuclear power industry documents for inclusion in on-line bibliographic databases and developed a procedure for selecting and granting priorities to critical document groups selected from a total of over 400 groups by basing selection on survey data collected from potential users (F-61/1984). The Australian Atomic Energy Commission (AAEC) International Nuclear Informaiton Systems (INIS) computer database is available for on-line searching. INIS contains more than 850,000 references to nuclear literature and related topics. INIS provides round the clock, inexpensive service (F-62/1984).

Databases : Engineering

Databases in civil engineering construction building is made available on-line through BRE (Building Research Establishment) database, British Standards Current Technology Index ISBEDEX and PICA (Property Service Agency Information on construction Architecture) (F-63/1984).

Databases: Industrial Design

CeCIle is the first database which specialises in the design of industrial forms, the environment of daily life, product design, architecture city planning and visual communication, CeCIle has developed

into an important tool for all those whose work concerns the various aspects of human environment, designers and industrialists, planners, researchers etc and the database provides 26,000 citations plus an annual additions of 8000 citations with monthly cumulations, as well as Selective Dissemimination of Information services by subscription profiles (F-64/1984).

Databases : Architecture

Both Architects and Designers need diverse, wide ranging and complex information. Few specific architecture, construction or design databases exist and the value of available databases to architects and designers is discussed and also outlines the potential development areas in the UK. The Potential development of database concepts such as ARIANA (France) and BYGGVARUREGISTRET (Sweden) is suggested (F-65/1983).

Databases: Air pollution and Acid Rain

The aim of the two databases viz; APIBE (Air Pollution, Its Biological Effects) database system and ARIS database (Acid Rain Information System) is to provide the Corvallis Environment Research Laboratory Scientists and Administrators with well organised sources of pertinent information. The journal articles and other publications cited in the databases are housed locally for rapid access (F-66/1982).

Databases: Computer Programmes

International Software database and computer Index available on DIALOG since 1983 provide the micro and minicomputer user with listings of available software package and an index to journal articles about micro computer applications. International software database is updated monthly (F-67/1983). At the Ashlib Northern and Midlands Branches Joint Annual

conference in 1984, Petrie describes the capabilities of the communication *Assistance Package* software which was developed for use with the cifer 2684 which the University of Strathcylode employs in on-line searches. The typical on-line search and the automated on-line records management system is also described (F-68/1983).

Data bases : Chemistry

The SYNLIB database developed by Smith Kline and French and Still of Columbia University designed to retrieve information on Chemical reactions (F-69/1985). The DIALOG information retrieval software was designed in the 60s to provide interactive searching of large databases by alphanumeric search terms, in both Boolean and proximity operations. Chemical information databases were adopted to this storage and retrieval system in the 70s, leading to the first on-line availability of Chemical Industry Notes, CA Index Guide, CA Patent concordance and the CA subject Index Alert (CASIA) in combination with CA condensates file. Complimentary chemical substances databases were created with unique features and enhanced contents (F-70/1985). To gather and analyse user input which is meaningful truly representative of an on-line service's community of users is a challenge. CAS has met the challenge by providing opportunities for gathering user input by conducting user training sessions, search assistance etc. CAS programmes such as user meetings and user councils are aimed specifically at gathering user input and even at enlisting the aid of users in analysing the input (F-71/1984). Environmental Chemical Data and Information Network (ECDIN) by EEC provides information on all aspects of chemicals to the member countries

through EURONET DIANE (F-72/1983). The Commercially Available Organic Chemicals Index (CAOCI) database, provides the chemist with a means of identifying the commercial availability of specific organic compound or group of closely related compounds by means of substructure search. Research chemists involved in the synthesis of novel organic compounds need chemical intermediaries and spend valuable time searching through suppliers catalogues for useful compounds (F-73/1983). A prototype information retreval system has been developed to search for either a specific substance or a family of substances of which the query compound is a member. A small-scale database was built from the gazetted list of existing chemical substances (F-74/1983). CSIN (Chemical Substances Information Network) established by the Environmental Protection Agency acts as a gateway network service to mediate between users and numerous services providing information related to chemical substances (F-75/1982).

Databases: Hazardous Chemical Substances

HAZARDLINE is an on-line database of detailed information on more than 2,700 hazardous chemical substances. Over 2,500 new entries are made on the database weekly. The establishment of HAZARDLINE in 1983 came from the passing of laws in the US fixing legal liability for hazardous substances (F-76/1984).

Databases : Toxicology

The major databases in the Toxicology field are TOXLINE, MEDLINE, CANCERLIT, EXCERPTA MEDICA, BIOSIS PREVIEWS, CASEARCH. The retrieval problems created by multidisciplinary nature of toxicology and the consequent breadth of toxicology are recognised. However, TOXLINE

doesnot claim to be comprehensive and other factors suggest that it should not always be preferred database for toxicology information (F-77/1983).

Databases : Phytotoxicology

A new database, PHYTOTOX dealing with the direct effects of exogenously supplied organic chemicals on terrestrial vascular plants is an invaluable tool in predicting and modelling the effects of organic compounds on plants and their ecosystems for the Governments, academic and industrial users (F-78/1984).

Databases : Geochemistry

In order to build a useful geochemical database, Bas reports the setting up of the Igneous Geochemical Database (IGDB) in UK and the aim of the database is to be available internationally through the world data centre set up under the auspices of UNESCO. The author also discusses the range, capture and format of the Geochemical databases and all the data sotred will be related to published works and a minimum of five chemical components per sample qualifies for inclusion and the data element will be sample number, identification and Source (F-79/1986).

Databases : Metallurgy

Balasubramanian and Bhattacharya discussed the framework of system design, integorration procedures and features of the Iron and steel on-line (ISOLINE) search systems in India with the goal of providing nation wide information services in the field of Iron and Steel. ISOLINE operates on METADEX, and incorporates a variety of facilities ranging from assisting novice users to instanteous performance evaluation and search request reformulation (F-80/1985). The chemical information contained in metals

databases specifically are Metal Abstracts/Alloys Index (METADEX), World Aluminium Abstracts (WAA) and WELDASEARCH and all are available on DIALOG. With both METADEX and WAA chemical names are presented with some variablity (F-81/1982).

Databases : Textiles

The three textile databases namely TITUS, TEXTILE TECHNOLOGY DIGEST and WORLD TEXTILE ABSTRACTS (WTA) contain chemical information. The three databases provide ample coverage of literature of textiles and includes wealth of chemical information (F-82/1983).

Databases: Earth Science

The Earth Resources Observation System (EROS) consists of 10,00,000 items identified in the database are not really photograps but computerised images obtained from satellites using remote sensing to obtain pictures of the earth's surface. Most imagery is obtained from Landsat, Skylab, Gemini/Apollo and NASA (F-83/1984).

Databases: Marine Science

The periodical coverage and indexing policies of Aquatic Sciences and Fisheries Abstracts (ASFA), Oceanic Abstracts, BIOSIS and GEOREF were compared and the analysis indicated that there is considerable overlap in sources in marine biology for ASFA, Oceanic Abstracts, and GEOREF. BIOSIS appeared to include the largest amount of material relevant to Marine biology and GEOREF the largest related to Marine geology (F-87/1982).

Databases : Forest Products and Paper Chemistry

The on-line literature of forests and paper products and technology provides ample opportunity for retrieval of chemical information. The

databases in these fields are PAPERCHEM, PIRA and FOREST (F-84/1983).

Databases : Biology

The structure of both BIOSIS database and the search guide accurately reflect the discipline of life science research. The guide consists of five major sections and additional documentation includes serial sources for BIOSIS database, and the BIOSIS Training course/BIOSIS PREVIEWS edition (F-85/1982).

Databases : Genetic Engineering

TELEGEN and BIOTECHNOLOGY, new databases on the SDC ORBIT System, index the whole range of genetic engineering literature. TELEGAN covers the business aspects of the industry as well as technical literature. BIOTECHNOLOGY covers patents and technical literature only and both file are searchable (F-86/1983).

Databases : Geosciences

Part one of the worldwide list of sources and reference databases in the Geosciences identifies 82 geoscience source databases dealing with non-renewable resources, geology, geochemistry and geophysics. Part two identifies 46 public reference databases of which 37 deal with literature and unpublished reports (F-88/1982).

Databases : Agricultre

The three comprehensive databases in the agricultural sector with the same scope are AGRICOLA, AGRIS and CAB. The majority of journal articles are recorded in these databases, but there are clear differences in terms of region and special subjects. The co-operation between the database producers is suggested (F-89/1986).

For the development of an Agricultural database, the Information Branch of the Western Australian Department (WAD) provides an internal information service for research and extension workers through out western Australia. The information branch developed a computerised on-line database RESIND or RESearch INDEX to handle the increasing volume of search and information produced by the Department. RESIND uses the STATUS software developed by the Atomic Energy Research establishment (F-90/1986).

The COFFEELINE database produced by the International Coffee Organization includes references from 5000 periodicals and a range of other non-periodical materials (F-91/1984).

AGDEX is an indexing service to the intermediate literature of agriculture providing a current awareness and retreival service primarly for agricultural workers in Scotland. Since 1973, the market for the service has expanded to include students involved in agricultural education and training throughout UK. Now they have future plans to include coverage from a wider spectrum of material using co-operative inputs and the addition of informative abstracts (F-92/1983).

The Commonwealth Agricultural Bureaux database is a machine readable file covering literature on agriculture and related fields of applied biology published throughout the world (F-93/1983). The PASCALINRA file produced by the National Institute for Agricultural Research (INRA) and the CNRS Scentific and Technical Information centre, covers the topics like plant production, zoology of protozoa and invertebratae in agricultural sciences. On-line retrieval and SDI is obtained from the information retrieval services of TELESYSTEMS and ESA

(F-94/1983). A preliminary study of the overlap between the CAB Abstracts and TROPAG (Abstracts on Tropical Agriculture) databases, based on ten selected searches is reported and the results indicate that the average overlap between two files is less 10% and that of a comprehensive search in the subjectfield of agriculture both files must be used (F-95/1982). ABOA (Australian Bibliography Of Agriculture) is a co-operative databse coordinated and edited by CSIRO and mounted on AUSINET; ABOA is intended to control, storage and retreival purposes the bibliographic output of Australian agriculture and to provide the means by which the bibliographies, databses etc may be generated for the purpose of co-operative bodies. ABOA database covers general agricultue, fisheries, forestry, food technology, human nutrition, soil, plant and animal science, Agricultural economics and rural sociology (F-96/1982).

Databses : Veterinary Science

The TELEUM database produced by the teterinary Medical Library of the University of Montreal is a bibliographic information systems for veterinary libraries to assist them in their acquiring, cataloguing, inter-library loan procedures. TELUM started operation in 1981 by the veterinary Medical Libraries Section of the Medical Library Association with which many veterinary medical libraries in the world, co-operate by sending data on their acquisitons. The users find TELUM most useful as a means of keeping upto date with publications in the Veterinary field (F-97/1984).

Databases : Medicine

The database HELMIS (Health Management Information Service) developed at the Nuffield centre for Health services studies, Leeds

University maintains informations for health management and the system runs on DEC/PDP11/23 computer and employs MICRO-CAIRS level C soft ware. The HELMIS database supports information services both in house and to external enquiries and include on-line searches and bibliographies (F-98/1986). A MEDLINE feasibility study by North Eastern consortium for Health Information potential users and supporters of MEDLINE within hospitals are unaware of its usefulness and services (F-99/1986). The MINIMEDLINE system, a user friendly search system developed at the Georgetown University Medical Cente, Washington is designed to meet the immediate educational clinical information needs of students, residents and faculty. The database is a subset of the NLM's MEDLINE file and it includes over 180,000 citations to articles indexed in over 160 journals. The system allows users to conduct bibliogrphic searches (F-100/1985).

The BIOETHICSLINE file (BIOETHICS) is a bibliographic database produced at the Kennedy Institute of Ethics, George town University is made available on-line through NLM's MEDLIARS System. This database provides multidisciplinary coverage of the ethical, legal, and public policy aspects of medicine, healthcare, biomedical and behabvioral research (F-101/1984)

MEDLARS and MEDLINE are two world's largest information retrieval systems and the databses are now available in many countries and the users are also increasing (F-102/1983). In England, a computerised bibliographic retrieval system known as 'paper chase' was established and the system permits uses without previous training to search the medical literature themselves (F-103/1983). Meyer and Pinegar discribes about updating inconsistencies in Excerpta Medica. The inconsistencies occur

because sometimes some items may be entered in the closed file, never having been entered in the current file. Search statements are limited to a specific year and updating for the same year will not yield the same result. It indicates appropirate search strategies to be used to improve retrieval (F-104/1983). A new in-house access to MEDLILNE at NLM via IBM 3279 is described by Ahmed EL-Hoshy and the accompanying performance features of speed, screen oriented DIALOG and DIACRITIC support for western European languages are also discussed (F-105/1983).

Carol Tenopir has described two new developments in Health sciences in 1983. The one is BRS/Colleague which provide bibliographic and full text biomedical databases for major text books and important journals. The second one is the BIOSIS Information Transfer System (BITS) which is an end-user service for the biochemists (F-106/1983).

The MEDICINE database available on BRS provides searchers with flexible capabilities for efficient searching and several non-traditional use of MEDLINE databases are suggested. BRS produced PRE-MED and PRE-PSYCH databases (F-107/1982).

The Wit-waterstrand Medical Library (WML) started to offer on-line searches on the MEDLARS database as a service to its regular user community and the service is subsidised by the South African Medical Research Council and the NLM. Following the success of this service access to the DIALOG system was established at WMC as a service for other faculties (F-108/1982). The objective of the AMA/GTE Medical Information Network is to develop an on-line access system for medical information through a network of oinstitutional and individual nodes. The databases include information on drug therapy, medical procedures,

terminology,sources of information and business applications (electronic mail). The program is significant, as the concept is applicable to other areas of specialisation in the biological, physical, social as well as the humanities (F-109/1982). Evaluation of information covering all aspects of cancer development is done and identifies the bibliographic databases covering carcinogenic and related effects of chemicals. Briefly describes the data collections referred to via the US Chemical Information System (CIS) and covering occupational carcinogenicity. A European equivalent to (CIS) is the Environmental Chemicals Data & Information Network under the auspices of EEC (F-110/1982).

The CPLM (Clinical Practice Library of Medicine) is an on-line system designed to access a large range of available medical text book information and the high level query type database manager, INQUIRE is used (F-111/1982).

JICST (Japan Information Centre for Science and Technology) has prepared a file of domestic medical literature and has provided its service through its on-line information system (JOIS). The source was 300 Journals originally and the file size was 30,000 records annually (F-112/1982).

Databases: Drugs and Pharmaceuticals

Lawrence and Reckleft outlines the stages in the development of an in-house bibliographic database retrieval system at Jansen Pharmaceutica using Wang - Advanced Functions Visual Memory on the Wang Office Information system Model 5949. The data entry specialists enters the bibliographic record into the file and retrieves selected references on drug compounds by combining the functions of Wang Allian ces Word

Processing and visual Memory. With the case of the access of the system the last minute additions to the data base can be made them printed as Boolean logic (F-113/1985).

A full text file of Drug monographs is offered by the American Society of Hospital Pharmacists, which also produces International Pharmaceutical Abstracts since 1984. DIF (Drug Information Full text) includes in depth monographs that are concept searchable. It includes Chemical Registry numbers, trade names, Generic names, detailed information on drug use, pharmacology, drug interactions, stability toxicity and dosage. The database is available through DIALOG and BRS (F-114/1984).

The databases suitable for searching pharmaceutical topics can be grouped into three categories (1) databases devoted exclusively to drugs and the Pharmacy profession such as International Pharmaceutical Abstracts (2) databases covering clinical medical literature such as MEDLINE and other scientific databases which include coverage of the pharmaceutical literature such as BIOSIS PREVIEWS (F-115/1983). The DARC system allows chemical structures to be retrieved with bibliographic citations and mass spectra by drawing the structure diagram. The value of the system for the development of new drug is described (F-116/1983).

G DATABASES IN HUMANITIES

Six Lock heed DIALOG humanities databases are: America History and Life, Historical Abstracts, Art Bibliographies Modern, Philosopher's Index and Modern Language Association Bibliography. But they are not able to

fulfil the major requirements of humanities ie., retrospective coverage, comprehensiveness, flexibility and low cost (G-117/1982). Secondary access services for the Humanities have been in existence since 1910 and six of these indexes are available for on-line searching. The evolution of some of the services from print to on-line availability is discussed as are the user and database characteristics which make Humanists reluctant to use these services in machine readable form (G-118/1982).

Databases: Fine Arts

The databases available in Arts in Australia are the AVERY INDEX to Architectural periodicals and the Art Sales Catalogue Database (SCIPIO), and these databases are of special interest to arts librarians. ARTQUEST is an on-line version of the Annual Arts Sales Index (G-119/1984).

The experiences in using the on-line computer system DIALOG and its arts database Art Bibliographies Modern at the State University of New York is described by Paula Baxter. The author also stressed the need for the creation of more art databases and also make some suggestions for improving Art Bibliographies Modern and all future art databases (G-120/1983).

Databases: Photography

PHOTONET is an on-line service devoted to the photographic and publishing industry. PHOTONET subscribers with their microcomputers, via phone lines, access electronic bulletins boards send and receive electronic mail, order photographic equipments and use text editing, mailing list and communication facilities (G-121/1985).

Databases: Folk music

To meet the special needs of University users an on-line database for Ethnic Music was developed at Essen University, West Germany and the

system uses ordinary languages rather than alphanumeric codes. To illustrate some of the programme features, a description of theoretical search and also describes the problems associated with on-line information retrieval in the music field (G-122/1984).

Databases: Sports

In 1982 the International Association for Sports Information (IASI) designated the SPORT DATABASE, produced by the Sport Information Resource Centre (SIRC), Ottawa, Ontario as its Official International Sport database. The author also discusses the subject coverage of the SPORT database the Olympic coverage in Sport, the online searching and the database features (G-123/1984).

Databases: Philosophy

PHILOSOPHER'S INDEX is an on-line database available through DIALOG since 1980. Later books and dissertations were added so that the subject coverage will be very comprehensive (G-124/1982).

Databases: Psychology

Fabiano Emily describes the searching capabilities of the Educational Testing Service File (ETSF) and Mental Measurements Yearbook Database (MMYD) which are available on BRS is devoted exclusively to test information. The author also describes the samples of the same search on ETSF and MMYD and also sample searches concerned with test information for DISS, ERIC and Psychological Abstracts Information Services (PSYC) databases (G-125/1984).

PRE-PSYC database helps to reduce the secondary publication delay and the goal of this database is timely access to important psychology papers. PRE-PDYC via companion to PRE-MED. PRE-PSYC is a tool for

assessing recently published clinical psychology literature and updating the PSYCHINFO searches (G-126/1983). The comparative studies of the online access to psychoanalytic literature reveals that there is not 1 database which can be relied upon as the one principal database for psychoanaysis, although NIMH on BRS has advantages over MEDLINE and PSYCINFO both on DIALOG (G-127/1984).

H DATABASES IN SOCIAL SCIENCES

Skinner Robert suggests the databases like U.S.POLITICAL SCIENCE DOCUMENTS, ERIC, LANGUAGE and LANGUAGE BEHAVIOR ABSTRACTS, POPLINE, POPULATION BIBLIOGRAPHY, PSYCHINFO, SOCIOLOGICAL ABSTRACTS and CHILD ABUSE AND NEGLECT are very helpful for searching for references on the history of Social Sciences (H-128/1985).

Databases: Women's Studies

The Catalyst Library started in 1975 is a non-profit organization built up with a collection of materials on issues affecting working women and also created an on-line database from the collection of libraries in the 1980s and this database Catalyst Resources for Women (CRFW) is available on BRS (H-129/1985).

Databases: Population studies and Family Planning

POPLINE is a comprehensive collection of the world wide literature on population and Family Planning is a co-operatively produced bibliographic retrieval system offers the greatest depth

and breadth of subject coverage in this field (H-130/1985).

Boodley explains the origin and contents of the Family Resource database which hold over 52,000 citations covering family and allied fields and is available on BRS and DIALOG and also discussed the subject covered, sources of information, selection of information, record contents, users of the database and future developments etc. (H-131/1984).

Databases: Social and Statistical Data

A study undertaken by US Bureau of the Census the effectiveness of the following databases to provide sources for statistical research and methodology. They are NTIS, ERIC, PSYCHINFO and SSIE CURRENT RESEARCH (H-132/1983). The three reasons for the under utilization of social science data services are the poor quality data, lack of coordination and planning of the statistical information system and the lack of appropriate models and data according to Alice Robinson (H-133/1982). The impact of information technology on public access to social sciences databases are the rapid increase in the availability of microcomputers, the existence of a telecommunication network, the tendency for more information to appear in machine readable form and an increase in the number of individuals familiar with and inclined to utilize machine-readable data files (H-134/1982).

At the International Conference on databases in the Humanities and social sciences held at Iowa in 1985 reported that Librarians as Generalists are seldom closely involved in research projects on university compauses because they are too concerned

with universal access, networking, communication standards and collects everything and disseminate on demand (H-135/1985).

Databases: Education

ERIC is a useful source of information that is unavailable or hard to obtain elsewhere such as speeches, conference papers, state and local curriculam guides, research reports, reviews and unpublished articles and dissertations. ERIC database describes two kinds of search strategy manual and by computer and also discusses the procedure for obtaining access to actual copies of ERIC documents (H-136/1984).

In Education also databases are arising in the practical fields. In 1980, School Practices Information Network (SPIN) and School Practices Information File was set up by Educational Services Group. SPIF is a computer searchable database of abstracts describing educational programms, practices and instructional materials which is compatible with and complementary to the Educational Resources Information Centre (ERIC) System (H-137/1983). On average in a month a major university does 21 on-line searches and 115 batch retrospective search on the database from ERIC in the field of Education (H-138/1983).

The Australian Education Index Database developed in 1978 from the records of the Australian Education Index and Other files are also included to provide a comprehensive coverage of Australian Information in Education (H-139/1982).

Databases: Geography

Selecting databases in Geography is challenging due to the interdisciplinary nature of the subject. Lamprecht found 14

databases useful in cultural geography searches and are available through DIALOG information service in terms of content and applicability to Geography (H-140/1986).

Databases: History

AMERICA: History and Life (AHL) is a database available via DIALOG. AHL recommends as first source for US and Canadian History and on Interdisciplinary topics, eg: Popular culture, women's studies, ethnic minorities. It may also be valuable source in searchers on literature and social and political issues (H-141/1983). POLIS is a Parliamentary on-line Information System meant for the MPS of the British House of Commons (H-142/1982)

Databases: Economics

An increasing number of European databases are available in USA. EUROSTAT is an example which is compiled by EEC member country Statistical offices. The topics covered are, annual financial data, production and interval data, economic transactions and agricultural prices (H-143/1982).

Databases: Economic Development

The four non-commercial databases of economic development literature are DEVSIS (Ottawa), DEVSIS Africa (Adis Ababa), UN-DIS (New York) and US-DIS (Washington) available on DIALOG (H-144/1986).

Databases: Banking

FINIS (Financial Industry Information Survey), a product of the Information Centres of the UK Bank Marketing Associations is a

bibliographic database was developed to address the information needs of the financial services industry and is available on DIALOG and Mead Data Control's Reference Service. The special searching facility of FINIS is also described (H-145/1986). MONEY On-line is another database covering U.S. Government-Grants and other corporate awards available through DIALOG (H-146/1983).

Databases: Business Information

PROMT is an on-line bibliographic database dealing with business and economics and high level use of PROMT is attributed by its unique advantages when compared to other similar databases, that is, the typical coverage, realiability and convenient presentation of information and searching etc (H-147/1983).

Principal International Business Directory database is a valuable guide for getting details of the various business information and the world's commercially important markets and each business listed in the database provides a financial and statistical picture of the firm for easy and accurate evaluation and comparison. The PIB database is available on-line via DIALOG and the data is revised annually (H-148/1983).

Databases: Marketing and Advertising

In 1984, a survey of Information Professionals involved with advertising and marketing of consumer products using existing information service indicated the need for providing more information than was being provided. Predicasts created Marketing and Advertising Reference Service (MARS) to meet this request. The author discusses the special features of MRS, its application, use,

availability etc (H-149/1986).

HARFAX Industry Data Source, a new on-line bibliographic database which provide access to international statistics on 60 key industries and the database is available on BRS, DATA STAR and DIALOG. The primary focus is the identification and description of marketing and financial data on 60 industries derived from a range of industry-related sources such as market research reports, investment brokerage firms reports and trade journals (H-150/1983).

The Dow Jones News/Retrieval Service is a group of computerised databases designed to provide timely, factual and pertinent information to businessmen. The system is easy to use, but the US bias decreases its value for Non-Americans (H-151/1982).

Databases: Law

Full text on-line databases has the potentials to be used as tools for scholarly and historical research has scarcely been trapped. Expense and the inclusion of only very recent documents limits the utility of databases for historical research. LEXIS and WESTLAW have historical coverage (H-152/1983). The Electronic Legislative Search System (ELSS) from Commerce Clearing House is a comprehensive service which tracks U.S.current state and federal legislation (H-153/1983). DIALOG System also functions as a legal research tool DIALOG is an invaluable resource for legal research concerning federal securities regulation (H-154/1984).

Ian Nosworthy reviews the developments in computerised legal information retrieval systems outside Australia including the on-line services such as LEXIS, WESTLAW, EUROLEX, Australian

developments are examined with special consideration given to the implication for the smaller states (H-155/1982).

Subramanian, suggested that in Indian context the common law system demands that statutes, regulations and decisions are to be searched in that laws and regulations govern and cases which are point are found in order to resolve legal issues and the author stressed the need for establishment of automated legal search and the function of LEXIS and WESTLAW are also discussed in details (H-156/1986).

I DATABASES: BY TYPES OF SOURCE DOCUMENTS

Database expansion has also seen in the types of source materials used. There are databases covering government reports, patents, journal articles, monographs, maps, government publications, audio-visual etc.

Patents

The origin and development of the technical information organisation Telesystemes Questel, covering French and EPO patent documents and the patent family files and the co-operation with Derwent publications enabled the World Patents Index (WPI) to be loaded on QUESTEL main frame. The possibility for statistical analysis of patents and the development of software for helping the searching of the chemical substructure also developed (I-157/1986).

The progress of the patent database PATDPA in which text searches can be carried out in titles and abstracts of DE patent

documents and also in which in a later stage the accompanying patent drawing can also be displayed in the screen. Vectorisation techniques are used for drawings. On present packet switching networks transmission of an average patent drawing takes 15S but this will be reduced considerably when networks with increased speed transmission are available (I-158/1986).

According to Roy Sherlyl the patent databases are useful for the business librarians to help their clients seeking for various types, information about patents. An on-line searching can be expensive so the searcher is aware of the characteristics and limitations of the various databases. Reviews the kind of information retrievable from patent databases and offers guidelines for selecting the best databases (I-159/1986).

Being a highly specialised area of information documentation, patents have in the past been ignored, inefficiency utilised or intentionally avoided by some information specialists. As a result of this many hours of research time and millions of dollars of research resources are wasted. European patent office has four on-line EPO databases for internal needs. But so far as only the European patent (application) register database is available externally through EURONET. Several problems are araising in providing external on-line areas to other three databases. The Administrative Council of the EPO had set up a special working group to decide this matter (I-160/1984).

For the statistical analysis of patent data, a new software was developed by Derwent Publications Ltd., and was launched in

1983. This software allows both inexperienced and experienced users to carry out statistical analysis of data contained with in the Derwent patent databases. (I-161/1983).

Patents have been a vital part of chemical Abstracts since its publication in 1907. A computerized patent processing system was installed in July 1980 to improve consistency in selecting chemical patent documents for abstracts in C.A. The coverage is extended to patent documents from certain countries (I-162/1983).

Dissertations

Comprehensive Dissertation Index (CDI) file covers dissertation prepared by research students studying for higher degrees, is from University Microfilms International. The CDI file is available on-line from DIALOG, BRS and SDC. CDI is fairly simple database but lacks in depth indexing. CDI backfiles covering 1861 present are available (I-163/1982).

Newspapers

McCleary describes VU/TEXT, full text daily newspaper information has the full text of nearly 16 US daily newspapers and also offer, other databases such as PROMT, ABI/INFORM etc. The author also discusses the record format, connecting to VU/TEXT, preparing a search, file selection, costs and consumer support (I-164/1985).

The on-line access to newspapers in their complete text or to indexes or abstracts of newspapers are readily accessible through three databases. The advantages and disadvantages of the Information Bank on NEXIS, the NDEX on ORBIT and the National

Newspaper Index on DIALOG, asserts that more regional newspapers are coming on-line and choices can be made by librarians as to what newspapers, systems and newspaper information will be available through the library. The current information about any database must come from the database producer or on-line vender (I-165/1984).

The Oklahoman and Oklahoma City Times installed a DEC/Battelle on-line full text retrieval newspaper library called Data Times which is expected to have 30-35 outside customers by the end of 1983. In 1983, the database contained 50,000 stories and about five new ones are added each hour. The system regularly processes 100 transactions a day and also a project to micro film 2.5 million library clippings to produce an on-line index for information retrieval (I-166/1983).

Government Documents

The use of on-line databases in a Government documents department examines the usefulness of three on-line databases, NTIS, ERIC and MONTHLY CATALOG OF US GOVERNMENT PUBLICATIONS, in reference work in a separate government documents departments in the library of a large urban public University. Data is presented for conducting search for various information and conclusions are drawn regarding the patterns and value of using on-line databases to answer reference questions in a Government document department (I-167/1984). The development of computerised on-line software combined with the interest of commercial publishers in making

Government documents more accessible has brought about revolutionary changes in methods and materials used to index and access US Federal documents (I-168/1982).

Periodicals

On-line data bases are also available covering periodicals published throughout the world. ULRI database of Ulrich's International Periodicals Directory and OCLC on-line databases are examples. The search keys on OCLC are simple to learn, while the powerful capabilities of ULRI provide for more flexibility (I-169/1983).

Audio-Visual Materials

AV-ONLINE file 46 on DIALOG, the new name of National Information Centre for Educational Media (NICEM) database is an index to annotated bibliographic descriptions of audiovisual materials of educational/informational nature covering 16mm motion pictures, videotapes, videodiscs and 8mm motion catridge (I-170/1985).

Grey Literature

The accessing existing of grey literature in Science and Technology to the users poses a major problem. Active acquisitions of reports and other species in Science and Technology by a number of technology related institutes collaborating on this topics, such as in the Netherlands is advocated. After the reports are acquired these must be made accessible on subject. For this the International on-line bibliographic database can perform a prominent role (I-171/1986).

Electronic Publishing

The Bibliographic record transfer using electronic mail by John Menzier Library Services Ltd., UK describes that the titles are transmitted to libraries weekly using British Telecom's Telecom Gold for output and manipulation of down loaded data (I-172/1986).

The Learned Information Ltd's new electronic journal, Electronic magazine available on-line through ESA-IRS describes the advantages of electronic publishing over print together with the design criteria and chice of initial market and host. The subject coverage is that of electronic publishing, information retrieval, modern library systems and methods of charging users and details of search programme (I-173/1984).

J EXPERT SYSTEMS

Charles T Meadow gives report on the development of the Individualised Institution for Data Access System (IIDA). IIDA is an example of a class of a computer system which serve as intermediaries, enabling their users to perform a complex task on another computer and which are coming to be known as "Expert systems". The system was designed to encourage users of information retrieval system to perform their own searches by instructing them in how to search, using computer assisted instruction and assisting with the performance of the search providing diagnostic analysis of the users performance as well as answering their questions about how to use system commands (J-174/1982).

Wilkinson Julia Mary describes the specialist bibliographic database of literature on Artificial Intelligence created by Turing Institute Library database is an in-house operation using BRS/Search information software. Access is by dial-up methods and use changes consists of a single annual payment enlisting subscribers both to unlimited access to the database and to the document provision service of the library (J-175/1986).

Knowledge bases differ from databases that they consists of not only of facts but also assumptions and beliefs expressed as rules. "Expert systems' are the first fifth generation system to emerge and the concept of extracting relevant information from an expert and coding that knowledge is called knowledge Engineering. RABBIT is a user friendly database (J - 176/1986).

The DARC system deals with the structural information both for documentation and for Artificial Intelligence (AI) endeavours in Chemistry and its topological concepts are briefly reviewed (J-177/1985). "Expert systems" are considered as new generation of information storage and retrieval systems which may improve the process of scientific and technical information exchange (J-178/1984). Search Helper is a newly developed user friendly software package designed to enable a microcomputer to be used in searching the Information Access Company databases on the DIALOG Service. The nature of the package allows for computer searches that are much lower than in cost than the usual DIALOG, BRS and SDC. California State University has had search helper since 1982 (J-179/1984).

Numerous public administration studies show that local government agencies lack access to comprehensive information resources. The NASA/University Kentucky Technology Applications Program devotes a considerable effort to providing scientific and technical information and assistance to local agencies relying on its access to over 500 district databases (J-180/1985). NLM is developing knowledge Bases aimed at providing information and it is judged and assessed critically HEPATITIS KNOWLEDGE Base is potential value to UK Medical Workers. Knowledge based programmes are automatically guaranteed analysable and executable by machine and human brain alike (J-181/1983) Investigations were done on the problem of intermediary searching and self searching. It was found better search satisfaction was got in intermediary searches (J-182/1983).

K USER EDUCATION

Databases were at earlier times used only by Government and its contractors. They were followed by industry then academic institutions and now public libraries are seen providing databases (K-183/1984). In the U.S.A, there are now several new on-line services aimed directly at the end user market, including DIALOG's KNOWLEDGE INDEX and BRS'S AFTER DARK. Database indexes when used effectively can provide users with searches of high precision and recall. However, indexing policies, procedures and

philosophies vary greatly from one database to the other (K-184/1984).

The Faculty end user training programme developed and implemented by the Information Service Division of Fenwick Library George Mason University, Virginia include, a BASIC language computer assisted instruction package for the IBM-PC designed to introduce the trainees to Boolean logic, truncation, search strategy and several extensively annotated searches on BRS, DIALOG and BRS/After DARK and the purchase of BRS/AFTER DARK passwords allow end users to search at home and promotion of library staff as consultants as well as Intermediaries (K-185/1984). With the increase in demand for on-line training of endusers of chemical databases, CAS has developed a workshop for helping Chemists, Engineers and other scientists to find chemical information in the CA file. The Kodak Research Laboratories and the Eastman Chemical Division Research Laboratories elected to participate the Training Programme offered by CAS for searching the CAS on-line databases (K-186,187/1986).

In the field of Medicine, COLLEAGUE is an on-line service providing physicians and other health professionals with direct access to both bibliographic and complete text biomedical databases and other knowledge resources (K-188/1985). Various surveys were conducted to find the user's awareness of accessing the bibliographical databasese and then on-line services especially MEDLINE, CATLINE etc. of NLM (K-189/1985). Various types of user aids, user instruction manuals and teaching methods were also

provided in different subjects fields. MEDLERAN is a Computer assisted instruction programme of NLM for Medical literature, QUILL package for legal literature, INSPEC user manual, INSPEC thesaurus, for physics, electrical engineering etc. TELEGENLINE user's manual in biotechnology etc come under this. These user aids will help the easy accessability of the databases and for retrieval of information in an easy way (K-190,191/1983).

For optimising convenient access to databases various suggestions have been given which include the elimination of controlled language thesauri and of indexing and the use instead of natural language of the title and abstract as input to improve search performance (K-192/1984). For end-user convenience there should be a single database covering science and technology. The coverage would not be exhaustive, but be restricted to papers from the most important sources. Number of Information users have increased cincluding public (K-193/1984).

DATABASES: SEARCH STRATEGY

An examination of multidatabase searching done by Julie M Neway and Lancaster is described in the study entitled the databases examined were MEDLINE, BIOSIS and LIFE SCIENCES COLLECTION. Duplicate citations were found to be more pertinent than unique citations. The duplicate citations were found to came from a highly compact literature, while those from a single database were very widely scattered. Pertinent duplicate citations were more likely to be retrieved in searches that had more terms, had a

higher percentage of thesaurus terms and had terms which appeared in both titles and abstract. The result suggest that the rate of duplication of citations in multidata searches can be used to rank output according to portable pertience (L-194/1983). Vander proft describes a method of cross host searching of patent related databases in different hosts using a personal computer cross searching from US Class (SDC) to WPI (Questel) and from WPI (Questel) to INPADOC (Vienna) are given (L-195/1986). WILSEARCH is a user friendly WILSONLINE Gateway with a variety of search assistance features and it has the unique features including searching two databases at once and a technique for redefining search strategy (L-196/1986).

Multisystem command chart is described as an aid to online searching. A multi system command file is developed by four major on-line information retrieval systems, NLM, BRS, ORBIT & DIALOG. The command headings are colour coded for each retrieval system (L-197/1983).

The current trends in the database searching is towards free text, natural language searching of titles, keywords, keyword phrases or abstracts. The number of full text databases available for online searhcing has increased dramatically. It is expected that both full text databases and multipe occurrence based search demands will become increasingly familiar. BRS is the vendor most active in this area (L-198/1984). Full text computer assisted reserach programme have become standard tools for searching large quantities of legal documents (L-199/1986). CASONLINE can be used

by the people to retrieve information on more than 200,000 polymers by using strctures as the search terms (L-200/1983).

M DATABASES : DOWN LOADING

Downloading issue has been polarised by an exagerated statement of the needs and expectations of users and data provides. Downloading is only one of many alternative ways of obtaining personalised information. Producers con done and elaborates on the practice and it has increased awareness of the potential of online retrieval in both users and data providers and has expanded the market for software and services (M-201/1986).

The technical developments have assisted the spread of downloading microcomputer system development for online retrieval, improved data storage, high speed (1200 baud) and single chip modems, expanded telecommunications networks capable of transmission speeds of upto 9600 baud and software for uploading and downloading (M-202/1986). The Central Information Service (CIS) London has responsiblities in several downloading areas. Downloaded citations are used in a variety of ways including editing, and merging citations from several searches creating in house databases and preparing the edited results for sale. Publishers have instituted other changes to deal with down loading and it has many promising effects on the database industry (M-203/1985).

At the National Online Meeting Jane Kalausmeier addresses both industry and user concerns about downloaidng and outlines the ERIC approach to providing downloaded portions of the ERIC

database for micro computer users. ERIC provides downloading and is able to monitor subject areas of interest and develop those areas for marketing. The use of MICROSEARCH as an effective menas of teaching the concept of on-line searching including the search strategy, Boolean logic and vocabulary control (M-204/1984). A comprehensive multiclient study by Cuadra Associates Inc (Down-loading online database : Policy and pricing strategies) is expected to provide answers to many questions about downloading that are being asked by producers, on-line services and users (M-205/1983). Now a days some database publishers are selling portions of their data bases on floppy discs or other storage media. Subsets provide an alternative to downloading and allow unrestricted patron access to database information and some of the commerciallyavailable subsets are ERIC MICRO Search, MIND, BIOSIS B-I-T-S, MEDLINE and MARVLS (MARC and REMARC Video disc Library system) (M-206/1985).

N STORAGE MEDIA

Magnetic tape, optical disc, floppy disc, microfiche, CD-ROM etc. are the important media used for automatic storage and retrieval. Optical disc storage technology is more applied to on-line. The recent developments in storage medium open new opportunities both for vendors and users of databases. Local databases that are designed for use with microcomputers are began to appear and they employ two basic recording media, magnetic media and media designed to be read by a laser. Knowledge Access

Inc, databases initially be available on floppy disk and in future on CD-ROM Magazine Index, National Newspaper Index and Legal Resource Index databases of Information Access, Inc available on optical disces in 1985 (N-207/1985).

White Martin discusses the impact of optical disc technologies on the storage and distribution of patent and trade mark information and outlines the development optical disc technologies covering compact audio disc, CD-ROM, CD-I and LV-ROM. Optical disc ,based legal database Legal Trac is used at the University of Florida, College of Law, USA (N-208/1986). Librarians and publishers confronted with opportunities and challenges of the new technology CD-ROM (Compact Disc-Read only Memory) and CD-ROM provides enormous storage capabilities it is cheaper, software stored disc itself. The main advantage of to libraries are local control, privacy, predictable losts, unlimited access, psychological advantages and end user searching. For the database producers, the lower cost of production and control over distribution. All of digital's CD-ROM database publication use MicroBASIS for search and retrieval and they include COMPENDEX, NTIS, CAS and Royal society of chemistry database (N-209/1986). A singnificant percentage of CD-ROM databases are of 1986 releases and they include LISA, NICEM'S Educational Media database, Chemical Abstract etc LCMARC database of catalogue is on CD-ROM with quarterly up dates (N-210/1986).

o **COST**

Carol Tenopir has studied about the pricing policies of major search services such as ORBIT, NLMMEDLARS, LEXIS, NEXIS,

CASONLINE, BRS and DIALOG, and asserts that pricing policies not only affect the library budget but can also affect the way in which searches are conducted. In 1983 and 1984 on-line system vendors have changed their ways of charging for their services. Otherwise, a fair, simple and consistant pricing scheme to suit search services, database producers and researchers is not developed. New pricing policies will continue to change (0-211/1984). With regard to on-line services the current practice is to charge per connect hour. So search strategies are devised to reduce search time rather than to maximize search results. Recently introduced factors are: charges related to on line printing, fixed annual subsrciption irrespective of use and combination charging. Many database producer distribute their products in several forms, including printed indexes, tapes and through vendors. To some extent these are competitive products and pricing strategies must take into account interactive effects. NLM have instituted a pricing policy that reflects the cost of on-line dissemination to all customers alike which excludes the cost of compiling indexing etc, that are done as the library's central activities (0-212/1982). A number of costsaving features available to users of DIALOG system. The availability of machine readable information products accessible on-line poses a threat to the existence of printed information products, but the shifting pattern of the products and usage makes it difficult to find the right pricing structure. Transfer of costs to the user is a subject of controversy, if fees are to be charged for on-line a national policy must be formulated. Appropriate standards schould

be kept to allow libraries to keep track of these costs in a uniform manner (O-213/1984).

P MAN MACHINE INTERFACE

Man machine interface is concerned with human factors in information system design. A properly designed human computer, interface will win over salesmanship where information system compete to attract users. Controlled, psychologically oriented experiments are beginning to yield guidelines for retrieval system designers. Evaluation during a system development is of utmost importance as rectifications are cheaper to make then. During active use, system revisions should be carried out annually or semi annually. Users are further assisted by online or telephone consultants, while electronic mail is an additional and a friendly form evaluation (p-214/1984).

Q DOCUMENT DELIVERY

Chemical Abstracts joined as one of the commercial vendor who offer document delivery services. Chemical Abstract is a welcome into this market place by providing many Soviet publications, various patents from a variety of countries and most materials cited by CA in their indexes with in last ten years. While Chemical Abstracts Document Delivery Services are not in-expensive (Q-215/1985). A report of EEC and International Electronic publishing Research centre in 1983 shows that over 50% of the information and information services originate from USA, Japan and

USA dominate the market EEC Directorate General financing experiments in the field of electronic document delivery and electronic publishing (Q-216/1984).

R DATABASES AND COPYRIGHT ISSUES

Bibliographic database copyright act was the topic of the American Library Association Winter Meeting by the Task Force Bibliographic databases in 1985. The US copyright Act has excluded databases from its purview. But copyright for locally produced databases can be secured if the three points are covered; notice, registration and deposit (R-217/1985). The information service company that facilitates the information identification and location processes through an information database retrieval system has a significant stake in the resolution of copyright issues affecting both the owners and information seeker. These issues must be resolved if the technologies are to be extended to anyone having the means of accessing the technology (R-218/1983).

S EVALUATION

Various evaluation and comparative studies were conducted in different subject fields as well as in the selection of vendors and other services offered by database producers. A comparison of online access to Chemical Abstracts (CAS) and the corresponding United Kingdom patent office Search System (C2C) was carried out using a sample of UK patent applications claiming organic chemical structures. The conclusion of this study was that the two systems

provide important and in some respects complementary alternative routes for information retrieval in this area. Use of CAS substantially increases the number and range of documents to be cited at the preliminary examination stage and has greater precision than for C2C (S-219/1986). Bibliometric evaluation of the CAB, CAIN and BIOSIS databases was investigated and the computer matching of the magnetic tape versions of three databases was carriedout. Lack of standardization in citations presented major problems in processing CAIN and CAB (S-220/1983). A comparison of Excerpta Mediea and MEDLINE for the provision of drug information to health care professional was investigated 168 searches were run against both databases by drug information pharmacists. No 1 database exhibited distinct advantages over the other although Excerpta Medica provided either an answer or more information on an enquirty in marginally more instances than MEDLINE. From the view of cost effectiveness, it was concluded that MEDLINE was the more efficient database in the context of Regional Drug Information Service (S-221/1983). The usage pattern of the ELHILL retrieval programme of the NLM's MEDLARS system was examined based on a sample of 6759 searches and the study concludes with suggestions for improving and redesigning both program and query language (S-222/1983). A Swedish evaluative study was done to investigate the potential usefulness of the ISI/BIOMED Bibliographic database at Karolinska Institute, Sweden (S-223/1983).

An evaluation of the two databases BIOMED and ISTPB from the Institute for Scientific Information was done to determine to the usefulness of the databases as retrospective search tools and the results showed that BIOMED could be very useful if directly relevant research front exist for search query. ISTB could provide additional information that is unavailable in other databases (S-224/1983). An investigation concerning the utility of the National Institute of Mental Health (NIMH) database for retrieving information in psychology is reported. The lack of comprehensive list of descriptors as well as lack of specificity of terms seems to impact negatively in a searcher's effort to access information from NIMH (S-225/1982). A user's comparison of WESTLAW and LEXIS legal databases carried out in USA suggest that both systems offer opportunity to search databases of full text, machine readable documents (S-226/1982). A survey of the usage and preference among 361 information professionals to use NEXIS and DIALOG database conlcudes that 51% of respondents used DIALOG exclusively and 2% used NEXIS (S-227/1984). On line searchers were asked to rank their perceptions of 7 database vendores over a set of 13 service related characteristics. DIALOG was perceived as ranking first on all attributes (S-228/1983).

Trends in the growth of on-line database available in Europe via EURONET DIANE are compared with the USA and the rest of the world. Statistical study showed that the number of bibliographic databases produced in Europe and USA is roughly equivalent, the USA produces 5 times more numerical data banks (S-229/1983).

Chapter VI

FINDINGS AND CONCLUSION

6.0 Introduction

The Scientific and systematic study based on the collected data is provided in Chapter IV and V. The major trends in the field of study are summarised in this chapter. The important findings arrived at are grouped under two broad headings; Findings based on statistical analysis, and the findings based on the subject analysis of literature.

6.1 FINDINGS BASED ON STATISTICAL ANALYSIS

The statisticsl analysis of the literature on computer-based bibliography databases gives the following findings: The most productive journal in the field of study is 'Database'. The second and third positions go to 'On-line' and 'On-line Review' respectively. The Indian journal 'Rilisar bulletin' comes in the 20th position. Most of the studies are emanated from U.S.A. The second position goes to U.K. In respect of subject distribution, the majority of the studies are on Science and Technology database. Out of these studies, the maximum studies are in the field of Medicine. The growth of literature in the field of investigation is maximum during 1983. The most productive autthor in the field of study is Carol Tenopir.

6.2 FINDINGS BASED ON THE SUBJECT ANALYSIS OF LITERATURE

General

The impact of computer in Library and Information science is tremendous and no library or organisation can be self sufficient in their respective areas of interest. The methodology and techniques developed and the advent of communication technology leads to reach the information and document delivery system emerged to cater this fast technology has reduced time and space.

Record Format

To cope with the developments taking place in different parts of the world unless the system is compatible, interchangability becomes a hurdle for universal usage and manipulation of data. In order to overcome this, different types of formats have been developed like MARC formats of different versions and Common Communication Format (CCF) etc.

Databases and Country-based studies

The major databases services in Japan are: JAPAN/MARC, PRIVATE SECTOR MARC and the Database of the National Centre for Science Information System.

BISA (Bibliographic Information on South East Asia) developed by Sydney University of Australia is a specialised database for the development of International standards for Sourth East Asian materials and training of South East Librarians in using computers. Large number of bibliographic databases are created from CILESgeneralised File Management System (GFMS) in Australia.

South African studies Information Database (SASD) is a comprehensive on-line bibliographic services on South Africa.

The co-operation between United Nations and member states lead to the establishment of two largest major information systems like INIS (International Nuclear Information System) and AGRIS. LABORDOC of ILO and CIS of International Occupational Safety and Health Information Centre are other specialised databases.

Latin American Scientific and technical information is covered by Chilean databases. In USA large number of new databases are added each year and offered on-line service through major vendors. Apart from these, all these countries make use of Database vendors like BRS, DIALOG, SDC etc.

Database Management System

DMBS software available in different versions have been used for local requirements for the manipulation of information needs.

Database Vendors

The rapidly growing number of new organizations offering on-line information to the multitude of audiences presents new challenges to the problems to the database publisher. The major challenges are:

1) The problems of defining the market for specific on-line product (2) the determination of usability of database by market place (3) training of the user on specific systems and offering high quality customer service. There are numerous producers and vendors

providing different services, because the same database is available through different vendors. The major vendors are DIALOG, BRS, SDC, BLAISE, ESA-IRS etc. In certain cases producer itself become vendors. However, the ultimate criteria for the selection of vendor is user's specific need.

General Subjects

Databases based on subject coverage is available in a number of disciplines. KNOWLEDGE INDEX is to cater personal interest and EDVENT database covers conferences/seminars directory are generalised databases.

Science and Technology databases

The popular major database giving access to historical and bibliographical information in sciences are BIOSIS PREVIEWS, AGRICOLA, CA Condensates, COMPENDEX, EXCERPTA MEDICA, MEDLINE, HISTLINE, INSPEC etc. MATHSCI, NTIS and COMPENDEX database provide sources of statistical information.

EBIB database is an energy database covers a large collection of energy related materials of the world's collection held at Texas A & M library and is available through SDC.

In the Engineering field, BRE (Building Research Establishmen) database in Civil Engineering, CeCILE in Industrial Design, ARINA (France) and BYGGVARUREGSTRET of Sweden in Architecture are offered. CeCILE, the first database which specialise in design of industrial forms, product design etc is an important tool for planners and designers.

The two databases in Air pollution and Acid Rain are APIBE and ARIS to provide with relevant sources of information in these subjects.

Quite a large number of databases are available in Chemistry field. Chemical Industry Notes, CA Index Guide, CA patent concordance and CASIA (CA subject Index Alert) in combinaiton with CA condensates file are the Chemical information databases for information storage and retrieval comes under this period of study. SYNLIB is a database on chemical reactions.

ECDIN (Environmental Chemical Data and Informaiton Network) by EEC provides all aspects of chemicals information to its members through EURONET DIANET. CAOCI database in organic chemicals, HAZARDLINE on hazardous chemical substances, TOXLINE on toxicology, and IGDB for geochemistry are other services offered by different organizations. CSIN (Chemical Substances Information Network) acts as a gateway network service between the users and various database services.

For predicting and modelling the effect of organic compounds on plants and ecosystem, PHYTOTOX is an invaluable tool.

In India, a software has been developed by Bhattacharya and Balasubramanian for oeprating in the METADEX for providing information service in the field of Iron and Steel. Other databases in different subject fields like TITUS, WORLD TEXTILE ABSTRACTS for textiles, GEOREF for geology, Oceanic Abstracts for marine sciences, PAPER CHEM, PIRA for Paper chemistry, FOREST for forest products, BIOSIS PREVIEWS for Biology, TELEGEN for genetic engineering, AGDEX for agriculture, COFFEELINE for coffee, TROPAG

for tropical agriculture, ABOA for Agricultura and TELUM databases for veterinary asciences etc have been brought out under this study period.

The three major comprehensive databses in the agricultural field are AGRICOLA, AGRIS and CAB. CAB database covers literature on agriculture and related fields of applied biology throughout the world.

MEDLARS and MEDLINE are the two world's largest information retrieval systems in Medical sciences. Other databases in Medical field are HISTLINE, HELMIS, and BIOETHICS.

MINIMEDLINE a userfriendly system is provided to cater the needs of searchers. Biosis Information Transfer System (BITS) an enduser service is also provided for Biochemists. PRE-MED and PRE-PSYC databases are also available in Medical field. The Medical Information Network AMA/GTE provides valuable service for accessing medical information. DIF is a database in drugs and Pharmaceuticals. All the medical databases are available through major vendors like BRS, DIALOG etc.

Humanities

In the area of Humanities, the popular databases available through DIALOG are: AMERICA: History and Life, Historical Abstracts, Philosopher's Index and Modern Language Association Bibliography. In the field of Humanities the studies inlcuded are AVERY INDEX, ART SALE CATALOG database for fine arts, PHOTONET

on line service for phtographic industry, PHILOSOPHERS INDEX for philosophy, Psychological Abstract Information Services, Mental Measurement year book databases (MMYD) for Psychology.

Social Sciences

The important databases like ERIC, PSYCHINFO, SOCIOLOGICAL ABSTRACTS, POPLINE, POPULATION BIBLIOGRAPHY, U.S. POLITICAL, SCIENCE DOCUMENTS etc. are very useful for searching social science information catalysit Resource for Women database (CRFW) for womens' studies is also developed.

ERIC database is a very useful source on information in the Education field, for Speeches, conferences, Reports etc. AMERICA; History and Life for U.S. and Canadian History, POLIS for parliamentary affairs and CRONOS of EUROSTAT OF EEC for Economic statistics are other databases services available for information retrieval. Several non-commercial database like DEVSIS for economic development are also developed. PROMT is an important business information database and HARFAX database is for industries. LEXIS and WESTLAW are the two databases in the field of Law.

Databases on specific types of sources

Databases are available on different types of source documents like patents, dissertations, Newspapers, govenment documents, periodicals, Audio-visual materials, grey literature and Electronic Publishing. World Patent Index (WPI), Comprehensive Dissertation

Index (CDI), NTIS, ERIC, US MONTHLY CATALOG OF GOVERNMENT DOCUMENTS, ULRICH and OCLC database, AV online etc come under this group. Studies on patents are more in number.

Expert System

Apart form the computerised bibliographic databases expert systems are available for end users for their study and diagnostic analysis. The expert system is believed to improve the process of scientific and technical information exchange. Knowledge base programmes are automatically guaranteed analysable and executable by machine and humanbrain alike.

User education

The databases available through different competitive vendors if at all to be used by intermediaries or edn users, a system of user education is necessary for effective and optimum use. It is found that vendors provide user education programmes through user manuals, user aids, user training and through newsletters. In the field of Medicine, COLLEAGUE provides physicians and other Health professionals with direct access both bibliographic and complete biomedical databases and other knowledge resources.

Search strategies

The search strategies used for different systems are quite varied and unless one is conversant with the database and its

interfaces, the output will not be economical. The search strategy for single, multiple databases are all seperate. The current trends in search is towards free-test, natural language of searching titles, keywords, keyword phrases or abstracts.

Downloading

Downloading is one of the many alternate ways of obtaining personalised information. Softwares are developed by certain vendors for this purpose. The technical developments have assisted the spread of downloading microcomputer system development for on-line retrieval, improved data storage with high speed and single chip moderm and telecommunication networks capable of transmission speeds of upto 9600 baud and soft ware for uploading and downloading.

Storage Media

The evolution of the storage media during the period of study is in the following order: Magnetic tape, Optical disc, floppy disc, microfiche and CD-ROM. Out of these, the most important media used is optical storage. Optical disc technology has more applied in on-line. The present trend is that a large percentage of databases are stored on CD-ROM.

Cost

Recently search strategies are devised to reduce the search and time rather than to maximize the results. The latest techniques

introduced are charging per character transmitted, charges related to on-line printing, fixed annual subscription irrespective of use and combination charging.

Man-machine interface

Man-machine interface is a new area where research is going on which will help to solve design problems associated with on-line search activities and man-machine interactions.

Document Delivery System

The document delivery is an area getting attention from information scientists. Various schemes were started in 1981 for document delivery.

Copyright Laws

The US copyright has excluded databases form its purview, but copyright for locally produced databases can be secured if the three points are covered, notice, registration and deposit.

Evaluation

A number of evaluation and comparative studies were conducted in the field of study during the period of study. Different databases provide same facility irrespective of the extent of the use. A bibliometric evaluation of the CAB, CAIN and BIOSIS databases revealed that lack of standardization in citation is a major problem in processing CAIN and CAB. More evaluation studies are conducted in Medical field.

6.3 CONCLUSION

The findings of the study have wide implications for information users, Librarians and information managers. Databases have emerged as one of the most important tools available today for handling information. The growth of bibliographic databases and database producing agencies are very dramatic and they are increasingly very large in numbers in a variety of subjects. Developments in information technology and communication technology in recent years promise to make access to bibliographic databases more and more easier and economical. Moreover, with advanced super-computing parallel system, the capability to access information is very large.

The biggest challenge confronting today is to link people all over the country to make them an entity in an integrated manner so that we can function and harness the power of information for enhancing productivity and efficiency to make the basic needs of our people. In order to materialise this objective, databases can play a crucial role in the changing scientific, technological, educational and cultural environment in India. In short, the role of bibliographic database in information transfer is so significant and its effective utilization is the need of the hour for the total information revolution in the third world countries like India.

APPENDIX I

LIST OF ABBREVIATIONS

The following is the list of abbreviations used in the text of the study.

AAEC	:	Australian Atomic Energy Commission.
A & I Service	:	Abstratcting and Indexing service.
ABI/INFORM	:	Abstracted Business Information.
ABOA	:	Australian Bibliography of Agriculture.
ADDA	:	Australian Database Development Association.
AGRICOLA	:	Agricultural Online Access.
AGRINDEX	:	A bibliography prepared by AGRIS.
AGRIS	:	International Information System for Agricultural Science and Technology.
AI	:	Artificial Intelligence.
AIM	:	Abridged Index Medicus.
AMC	:	Archival Manuscripts Control.
APIBE	:	Air Pollution: Its Biological Effects.
ARIS	:	Acid Rain Information System.
ASFA	:	Aquatic Sciences Fisheries Abstracts.
AUSINET	:	Australian Information Network.
BA Previews	:	Biological Abstracts Previews.
BISA	:	Bibliographic Information on South East Asia.
BL	:	British Library.
BLAISE	:	British Library Automated Information Service.
BRE	:	Building Research Establishment.
BRS	:	Bibliographic Retrieval Service.

CA	: Chemical Abstracts.
CAB	: Commonwealth Agricultural Bureaux.
CA Con	: Chemical Abstracts Condensates.
CAN/OLE	: Canadian Online Enquiry.
CAOCI	: Commercially Available Organic Chemicals Index.
CARL	: Colarado Alliance of Research Libraries.
CAS	: Chemical Abstracts Service.
CASIA	: Chemical Abstracts Subject Index Alerts.
CASONLINE	: Chemical Abstract Service Online.
CATLINE	: Cataloguing Online.
CBAC	: Chemical and Biological Activities.
CCF	: Common Communication Format.
CCMB	: Centre for Cellular and Molecular Biology.
CDI	: Comprehensive Dissertation Index.
CD-ROM	: Compact Disc Read only Memory.
CILES	: Central Information Library and Editorial Section.
CIN	: Chemcial Industry Notes.
CIS	: Central Information Service.
CLOSS	: Current Literature on Science of Science.
COMPENDEX	: Computerised Engineering Index.
CPLM	: Clinical Practice Library of Medicine.
CRDS	: Chemical Reaction Documentation Service.
CRFW	: Catalyst Resource for Women.
CSIN	: Chemical Substances Information Network.
DBMS	: Data Base Management System.
DDC	: Defence Documentation Centre.
DEVIS	: Developmental Information System.

DIANET	: Direct Information Access Network.
DIF	: Drug Information Fulltext.
DJNR	: Dow Jones News Retrieval.
ECDIN	: Environmental Chemical Data Information Network.
ERIC	: Educational Resource Information Centre (U.S.)
EROS	: Earth Resources Observation System.
ESA-IRS	: European Space Agency's Information Retrieval Service.
ETSF	: Educational Testing Service File.
FSTA	: Food Science and Technology Abstracts.
GEOREF	: Geological Reference.
GFMS	: Generalised File Management System.
GRA	: Government Research Announcements.
HEEP	: Health Effects Environmental Pollutants.
HELMIS	: Health Management Information Service.
HISTLINE	: History Online.
IASI	: International Association for Sports Information.
IGDB	: Igneous Geochemical Data Bases.
IIDA	: Individualised Institution for Data Access.
IIF	: Intelligent Interface Facility.
INIS	: International Nuclear Information System.
INPADOC	: International Patent Documentation Centre.
INSPEC	: Information Services in Physics, Electro technology, Computers and Control.
IPA	: International Pharmaceutical Abstracts.
ISMEC	: Information Service in Mechanical Engineering.
ISO	: International Standards Organization.

ISOLINE	: Iron and Steel On-line.
JICST	: Japan Information Centre for Science and Technology.
LC	: Library of Congress.
LISA	: Library and Information Science Abstracts.
MAPA	: Medicinal and Aromatic Plants Abstracts.
MARC	: Machine Readable Cataloguing.
MEDLARS	: Medical Literature Analysis and Retrieval System.
MEDLINE	: MEDLARS Online.
METADEX	: Metals Abstracts Index.
MIT	: Massachusetts Institute of Technology.
NASA	: National Aeronautics and Space Administration.
NCSI	: National Centre for Science Information.
NDEX	: Newspaper Index.
NFAIS	: National Federation of Abstracting and Indexing Services.
NISSAT	: National Information System in Science and Technology.
NISTADS	: National Institute of Science Technology and Develeopment Studies.
NLM	: National Library of Medicine (U.S.A.).
NTIS	: National Technical Information Service.
NUCSSI	: National Union Catalogue of Scientific Serials in India.
NYT	: New York Times.
OBAR	: Ohio Bar Automated Research.
ORBIT	: Online Retrieval of Bibliographic Information Timeshared.

OSI	: Open Systems Interconnections.
PATELL	: Psychological Abstracts Tape Education Lease Licence.
POLIS	: Parliamentary On-line Information Systems.
RAPRA	: Rubber and Plastics Research Association.
S & T	: Science and Technology.
SDC	: System Development Corporation.
SDI	: Selective Dissemination of Information.
SCISEARCH	: Science Citation Index.
SOCIALSCISEARCH	: Social Science Citation Index.
SPIN	: Searchable Physics Information Notes.
SPINES	: Science and Technology Policies Information Exchange Systems.
STAR	: Scienctific and Technical Aerospace Reports.
TIP	: Technical Information Project.
TROPAG	: Abstracts on Tropical Agriculture.
UKCIS	: United Kingdom Chemical Information Service.
ULTAS	: University of Toronto Library Association.
WAA	: World Aluminium Abstracts.
WPI	: World Patent Index.
WTA	: World Textile Abstracts.

APPENDIX 2

GLOSSARY

The Technical Terms used in this trend report are given along with their meanings/definitions below:

Acoustic coupler	:	A type of portable modem which is used with an ordinary telephone to link a terminal to a computer.
Alphanumeric data	:	Data which contains both letters, numbers, punctuation marks and some other characters such as $ or /
AND	:	A Boolean operator used in searching.
Batch Processing	:	A method of processing in which the programs or data are accumulated into the computer in a single block.
Baud	:	A unit of measure indicating the rate of signal modulation or the speed of transmission over the communication line.
Bibliographic database	:	A collection of bibliographic records in machine readable form.
Bibliographic Record	:	A collection of bibliographic data fields treated as one logical entity that describes a specific bibligraphic item.

Boolean operators : Words or symbols used to create search logic which retrieve terms in various combinations. Typically the operators are AND, OR and NOT.

Citation : Referring to either the complete bibliographic record or the bibliographic information contained in a record. eg.Author, title, etc.

Command : Words or symbols used to instruct the retrieval program to perform the specific tasks or operations.

Connect time : The elapsed time between LOGON and LOGOFF to a system.

Connectors : Boolean operators used to line concepts informing a search statement

Controlled vocabulary : Subject terms assigned to a document as descriptors or index terms are derived from a subject authority list such as thesaurus.

Current awareness : This searching retrieves only current material at regular intervals.

Data : A piece of information processed by computer.

Database	:	A collection (file) of information (data) in machine readable form accessible by computer.
Data element	:	A Specific field of information eg.Author, title etc.
Database producer	:	A compiler and/or publisher of a database or databases.
Database vendor	:	An organization which supplies on-line search service for one or more databases.
Dialup	:	A terminal, when not permanently connected to a computer must use a moderm and a telephone to connect it to the computer.
Disk	:	Storage area for magnetic data that permits one to access the data directly.
Duplex	:	Data transmission through telecommunications circuits.
Field	:	A portion of a record used to store a defined kind of data.
File	:	A group of related records.
Floppy Disc	:	A flexible magnetic disc frequently used as a storage device with mini and microcomputers.

Full duplex	:	Used to describe the mode of transmission of characters. In full duplex mode characters can be transmitted in both directions along the telecommunications channel simultaneously.
Gateway	:	A facility which allows a videotex system to access remote computer systems.
Half Duplex	:	In this mode characters can be transmitted in one direction only at one time.
Hardware	:	The physical components (ie. processors, printers, store, disc etc) of a computer system.
Host	:	A computer system which performs the actual processing of data and which is accessed via a node of a data network or via front-end computer.
Interactive system	:	A system which allows direct communication between a user and the data in a computer system by means of a conventional program dialogue.

Intelligent terminal	:	A terminal incorporating a microprocessor which can carry out local data processing or storage to ease the load of input of output handling.
Key	:	A group of characters to identify a record for searching or sorting purposes.
Leased time	:	A telephone line, usually leased from the national telecommunication agency which is specially laid to link a terminal or a computer at one site to another computer.
Logg off	:	The process of closing down the communication between the user and the computer in an on-line system.
Logon	:	The process of setting up the communication between the user and the computer in an on-line system.
Machine readable form	:	A medium used for recording programs or data which can input directly to a computer system.
Magnetic disc	:	A disc coated with magnetic oxide which enables one to store digital or machine readable data.

Main frame	:	A large, fast and (usually expensive) computer with a variety of peripherals and software which is acquired by an organisation to provide a centralised service for a wide variety of purposes.
Microcomputer	:	A small computer based on one or more processors providing a fairly cheap and compact computing resource.
Mini computer	:	A small computer often but not always dedicated to a particular task. The number of peripherals and the software available are limited.
Modem	:	A device which accepts digital information and adapts it for transmission over an analogue communications channels such as a telephone line and vice-versa.
Mode	:	A terminal or computer with communications capabilities in a computerized network.
NOT	:	A Boolean operator used in a search statement to retrieval of unwanted documents.

Offline	:	Used to describe a peripheral which is operating, but not connected to the main computer system.
On-line	:	Direct communication between a user and the computer system in an interative mode.
Online search service	:	An organization which provides facilities for the on-line searching of bibliographic, non-bibliographic databases from remote terminals.
OR	:	A Boolean operator used to link related terms.
Output	:	The end products of a computerized process obtained by transferring results from computer storage to an external device.
Record	:	Complete set of information referring to a particular item in a file.
SDI	:	Selective Dissemination of Information. A way of alerting users to the latest information records of potential interest to them.
Search strategy	:	A set of planned search statements in which the request is given to the computer.

APPENDIX 3

DIRECTORY

Note:

i) The following is a list of on-line bibliographic databses

ii) The arrangement is alphabetical

iii) Each entry provides the details such as, Name of the database with its acronym, database producer, starting year, vendors name and address, subject coverage and the printed version of the database if it is availabe, etc.

iv) The following abbreviations used in the directory:

P - Producer

V - Vendor

S - Subject

PV - Printed Version

1. ABI/INFORM (Abstracted Business Information/INFORM)

P Data Courier Inc, 620 South Fifth St., Louisville, Kentucky 40202, U.S.A. 1971.

V BRS, DATA-STAR, IRS, DIALOG, SDC

BRS

Bibliographic Retrieval Services, Inc Corporation Park, Building 702, Scotia, New York 12302, USA.

DATA-STAR
Data Star Marketing
199 High Street
Orpington BRG OPF
UK
IRS
Information Retrieval Service
ESRIN/Via Galielo Galile
00044 Frascati
Italy
DIALOG
Lockheed Information Systems
Dept 50-20, 3460 Hilview Avenue
Palo Alto, California 94304
U.S.A.
SDC
System Development Corporation
2500 Colarado Avenue
Santa Monica, California 90406
U.S.A.

S Business Management and administration.

2 ACCOUNTANT'S INDEX
P American Institute of Certified Public Accountants, 1211 Avenue of America, New York 10036, USA. 1974.
V SDC
S Accounting, Auditing, Banking Finance, Financial Management

3 AGRICOLA (Agricultural Online Access)

P US Department of Agriculture, National Agricultural Library Building, Beltsville Maryland 20705, USA, 1970.
V BRS, DATA-STAR, DIALOG, SDC
S Agriculture

4 AGRIS (International Information system for the Agricultural Sciences and Technolgoy)

P Food and Agriculture Organization of the United Nations, Viadelle Termedi Carcalla, 00100 Rome, Italy, 1977.
V IRS
S Agriculture and related subjects
PV Agrindex

5 AIDS/FOREST PRODUCTS

P Forest Products Research Society, 2801 Marshall Court, Madison Wisconsin 53705, USA.
V SDC
S Wood Products Industry

6 ALUMINIUM

P American Society for Metals, Metals Park, Ohio 44073, USA,1968.

V IRS, DIALOG
S Aluminum including ore processing, Metallurgy
PV World Aluminum Abstracts

7 AMERICA: HISTORY AND LIFE

P ABC-Clio Inc, American Bibliographical Centre, P.O.B 4397, California, USA. 1964
V DIALOG
S American and Canadian history and affairs

8	APILIT (API Literature)
P	American Petroleum Institute, Central Abstracting and Indexing Service, 156 Willam Street, New York 10038, USA. 1964.
V	SDC
S	Petroleum
PV	API Technical Index
9	APIPAT (API Patents)
P	American Petroleum Institute, USA
V	SDC
S	Petroleum patents Literature
PV	API Technical Index
10	APTIC (Air Pollution Technical Information Centre)
P	US Environmental Protection Agency, Research Triangle Park, N.Carolina 27711, USA.
V	DIALOG
S	Air Pollution
PV	Air Pollution Abstracts
11	AQUACULTURE
P	National Oceanographic and Atmospheric Administration, 6009 Executive Boulevard, Rockville, Maryland 20852, USA, 1970.
V	DIALOG
S	The growing of marine, brackish and fresh water organisms

12 AQUALINE

P Water Research Cente, Elder way, Stevenage, Herts SGI 17H, U.K. 1974.
v IRS, DIALOG
S Water including Aquatic environment, Coasts, Estuaries, Ground water etc.
PV WRC Information

13 ART BIBLIOGRAPHIES MODERN (Art Modern: Artbib Modern)

P Clio Press Ltd, Wood side House, Hinskey Hill, Oxford OXI 5BE, U.K., 1974.
V DIALOG
S Art and design from the beginning of 19th century

14 ASFA (Aquatic Sciences and Fisheries Abstracts)

P Food and Agriculture Organization, Rome, 1978.
V DIALOG, QL
QL
Quick Law Systems Ltd
797 Princess Street, Kingston
Ontario, Canada.
S Aquatic Sciences, Coastal Zone management, Ecology, Ecosystems, Marine biology etc.

15 ASI (American Statistics Index)

P Congressional Information Service Inc, 7101 Wisconsin Avenue, Suite 900, Washington D.C. 20014, USA.
V DIALOG, SDC
S All Statistical publications from the Federal Government that contain social, economic, demographic data

16 BHRA FLUID ENGINEERING (FLUIDEX)

P BHRA Fluid Engineering, Cranfield, Bedfordshire, U.K., 1973.
V DIALOG
S Fluid engineering

17 BIOCODES

P Biosciences Information Service of Biological Abstracts, 2100 Arch St, Philadelphia, Pennsylvania 19103, USA. 1969.
V SDC
S Biology and life sciences

18 BIOSIS PREVIEWS

P Biosciences Information Service of Biological Abstracts. USA. 1969.
V ANSTEL, BRS, CAN/OLE, DATA-STAR, DIMDI, IRS
ANSTEL
National Library of Australia
Canberra, ACt 2600
Australia.
CAN/OLE
Canadian online Enquiry
National Research Council of Canada
Ottawa, Ontario, Canada
S Biology and Life sciences
PV Biological Abstracts and Biological Abstracts/RRM
19 CA REGISTRY NAME FILE (CAR)

P Chemical Abstracts Service, The American Chemical Society, P.O.Box 3012, Columbus, Ohio 43210, USA. 1972.

V Pergamon Infoline - Brettenham House, Lancaster Place, London

S Chemistry Chemical name dictionary for CASEARCH

PV CA Registry Handbook

20 CA SEARCH

P Chemical Abstracts Service, The American Chemical Society, USA. 1967.

V BRS, DATA-STAR, IRS, DIALOG, Pergamon Infoline, SDC

S Chemistry, Biochemistry, Organic chemistry, Applied chemistry, Physical Analytical Chemistry etc.

21 CAB ABSTRACTS (Commonwealth Agricultural Bureaux Abstracts)

P Commonwealth Agricultural Bureaux, Farnham House, Farnham Royal, Slough SL2 3BN, UK. 1972.

V IRS, DIALOG, SDC

S Agriculture

22 CANCERLINE

P National Library of Medicine, 8600 Rockville Pike, Bethesd, Maryland 20014, USA.

V DIMDI, NLM

S Cancer including chemotherapy, Immunotherapy etc

23 CATLINE (Cataloguing Online)

P National Library of Medicine, USA. 1965

V NLM

S Medicine

24 CETIM (Centre Technique des Industries Mecaniques)

P CETIM, 52 Avenue, Felix-Louat, B.P. 67. 60304 Senils, France
V SPIDEL
Societe Pour'l Informatique
98 bd, Victor-Hugo, 92115 Clichy, France
Mechanical engineering

25 CHEMDEX (Chemical Index)

P Chemical Abstracts Service, American Chemical Soceity, USA
V BRS, DATA-STAR, DIALOG, SDC
S Chemistry, Chemical substance name and nomenclature
PV CA Registry Handbook

26 CIN (Chemical Industry Notes)

P Chemical Abstracts Service, ACS, USA, 1974.
V DIALOG, SDC
S Chemical processing industry

27 CLAIMS/U.S. PATENTS ABSTRACTS

P IFI/Plenum Data Co., 2001 Jefferson Davids Highway, Artington, Virginia, USA, 1978.
V DIALOG
S Patents in many fields
PV U.S. Patent Office Official gazette

28 CNI (Canadian News Index)

P Micromedia Ltd, 144 Front Street,

	Toranto, Ontario, Canada
V	DIALOG, SDC
S	Canadian News, events etc.
29	COMPENDEX (Computerized Engineering Index)
P	Engineering Index Inc, 345 East 47th Street, New York 10017, USA. 1969.
	CAN/OLE, DIALOG, IRS, SDC, INFOLINE
S	Engineering and related areas
PV	Engineering Index Monthly
30	COMPREHENSIVE DISSERTATION INDEX (CDI)
P	University Microfilms International, 300 North Zeeb Road, Michigan 48106. USA.
V	BRS, DATA-STAR, DIALOG
S	Dissertations accepted by US Educational Institutions and 122 Universities outside USA
PV	Dissertations Abstracts International
31	COMPUTER AND CONTROL ABSTRACTS
P	INSPEC, Institution of Electrical Engineers, Savoy Place, London,
V	BRS, CAN/OLE, DATASTAR, IRS, DIALOG, PERGAMON INFOLINE
S	Computers and control (of processes)
32	CONFERENCE PAPERS INDEX (CONF or CPI)
P	Data Courier Inc, 620 South Fifth St, Louisiville, Kentucky 4022, USA. 1973.
V	BRS, IRS, DIALOG, SDC
S	Citations from Conference papers

33 CRDS (Chemical Reactions Documentation Service)

P Derwent Publications Ltd,
128 Theobalcls Road, London
V SDC
S Chemical reactions and synthetic organic Chemistry
PV Journal of Synthetic methods

34 DOW JONES NEWS/RETRIEVAL (DJNR)

P Dow Jones - Burnker Ramo, Bunker Ramo Corporation, Turnbull Connecticut, USA.
V DOWJONES
S Business, Economics and Management

35 EBI (*Energy Bibliography and Index*)

P Centre for Energy and Mineral Resources, Texas A & M University, Texas, USA.
V SDC
S Energy

36 ECONOMICS ABSTRACTS INTERNATIONAL

P Documentation centre, Economic Information Service, Ministry for Economic Affairs, The Hague, The Netherlands, 1974.
V DIALOG
S Business and Economics

37 EDB (ENERGY INFORMATION DATABASE)

P U.S. Department of Energy, P.O.B. 62, Oak Ridge, Tennesse 37830, USA.
V INKA
S Energy

38 ELCOM (Electronics and Computers)

P Cambridge Scientific Abstracts, 6611 Kenilworth Avenue, Maryland, USA. 1977
V SDC
S Computers and applications

39 ELECTRICAL AND ELECTRONICS ABSTRACTS

P INSPEC, London
V BRS, CAN/OLE, DATA STAR, DIALOG, PERGAMONINFOLINE, SDC
S Electrical and Electronic engineering

40 ENERGYLINE

P Environment Information Centre,292 Madison Avenue, New York 10017, USA.
V IRS, DIALOG, SDC
S Energy

41 ENVIROLINE

P Environment Information Centre Inc, 292 Madison Avenue, New York, USA, 1971.
V IRS, DIALOG, SDC
S Environmental Science
PV Environment Abstracts

42 EPB (Environmental Periodicals Bibliography, EPB Online)

P Environmental Studies Institute, California, USA.
V DIALOG
S Environmental Science and studies

43 ERIC (Educational Resources Information Centre)

P National Institute of Education, Educational Resource Information Centre, Washington D.C. 20208, USA.
V BRS, DIALOG, SDC
S Education and Educational Materials
PV CIJE (Current Index to Journals in Education) and RIE (Resources in Education)

44 EXCERPTA MEDICA (EMBASE)

P Excerpta Medica, P.O.B. 1126, Amsterdam, Netherlands. 1974.
V DATA-STAR, DIMDI, DIALOG
S Nearly all Medical fields

45 FEDERAL INDEX (FEDEX)

P Capital Service Ind, 415 Second st, Washington DC 2002, USA.
V DIALOG, SDC
S U.S. Federal activities and public policy

46 FSTA (Food Science and Technology Abstracts)

P International Food Information Service, Lane End House, Berkshire, U.K. 1969.
V DMDI, IRS, DIALOG, SDC
S Food science and technology

47 GEOARCHIVE

P Geosystems, P.O.B. 1024, West Minister, London.
V DIALOG

S Geology and relates subjects
PV Bibliography of vertebrate paleontology.

48 GEOREF (Geological Reference)

P American Geological Institute, 5204 Leesburg Pike, Virginia, USA.
V CAN/OLE, DIALOG, SDC
S Geology and related subjects
PV Bibliography and Index of Geology

49 GPO MONTHLY CATALOG

P U.S. Government Printing Office, LIbrary Division, USA. 1976.
V DIALOG
S Government Publicatins Catalogue
PV Monthly catalog of U.S. Government PUblications

50 HEALTH (Health Planning and Administration)

P NLM, U.S.A. 1975
V BLAISE, DIMDI, NLM
S Health Care, financing, management etc.
PV Hospital Literature Index

51 HISTLINE (History of Mediciene Online)

P NLM, USA, 1970.
V BLAISE British Library Automated Information Service, 7 Rathbone Street, London WIP 2AL, U.K
S History of Medicine and related Sciences
PV Bibliography of the History of Medicine

52 HISTORICAL ABSTRACTS

P ABC-Clio Inc, American Bibliographical Centre, P.O.B. 4397, California, USA. 1973.
V DIALOG
S Wold History

53 INIS (International Nuclear Information System)

P International Atomic Energy Agency, P.O.B. 100, Vienna, Austria.
V IRS, IAEA
S Nuclear Science
PV INIS Atomindex

54 INPADOC

P International Patent Documentation centre, Mollwald plaz, P.O.B. 163, Austria.
V INKA Informations System Karlsruhe Kernfor Schungszentrum, D-7514, Eggenstein, Federal Republic of Germany.
S Patents and patents services
PV INPADOC Patent Gazette

55 INSPEC (Information Service-Physics, Electrical & Electronics, and Computer and Control)

P INSPEC, London
S Computer Science, Electrial and Electronics Engineering and physics.

56 INSPEC INFORMATION SERVICE

P INSPEC, London 1971.
V IRS
S Information Science

57 IPA (International Pharmaceutical Abstracts)

P American Society of Hospital Pharmacists, 4630 Montogomery Avenue, Washington, D.C, USA. 1970.
V DIMDI, DIALOG, NLM
S Development and use of Drugs in Pharmacy practice.

58 IRL LIFESCIENCES COLLECTION

P Information Retireval Limited, 1 Abbey St, Oxford, U.K. 1978.
V DIALOG
S Life sciences

59 ISMEC (Information Service in Mechanical Engineering)

P Data Courier Inc. U.S.A. 1973
V DIALOG, IRS, SDC
S Mechanical Engineering
PV ISMEC Bulletin

60 LABORDOC (International Labour Documentation)

P International Labour Officer Library & Documentation Branch, Geneva, Switzerland.
V SDC
S International Labour Trends and Developments

61 LCMARC (Library of Congress Machine Readable Catalog)

P Library of Congress, Cataloguing Distribution Service, Washington D.C. 20541, USA. 1968.
V BLAISE, SDC
S All subject fields. Databases contains monograph records derived from LC holdings.

62 LIBCON (Library of Congress)

P SDC Search Service, 2500 Calarado Avenue, California 90406, USA.
V SDC
S Records of monographs and some non-print materials derived from LC catalogue.

64 LEGAL RESOURCE INDEX

P Information Access Corporation, 404 Sixth Avenue, California 94925, USA.
V DIALOG
S Law journals, newspapers & related literature

65 LISA (Library and Information Science Abstracts)

P Library Association, 7 Ridgmout St, London U.K. 1969.
V DIALOG, SDC
S Library and Information Science

66 LLBA (Language and Language Behaviour Abstracts)

P Sociological Abstracts Inc, P.O.B. 22206, California, USA.
V DIALOG

S Nature and use of language

67 MANAGEMENT CONTENTS

P Management Contents Inc, P.O.B. 1054, Illinois 60079, USA. 1974.
V BRS, DIALOG, SDC
S Management

68 MEDLARS (MEDLARS On-line)
P NLM, USA. 1977
V BLAISE, BRS, DIMDI, DIALOG, NLM
PV Index Medicus Index to Dental Literature and International Nursing Index.

69 MEDOC (Medical Documents)

P Eccles Health Science Library, University of Utah, Utah 84112, USA.
V BRS, DATA STAR
S U.S. Government documents in Health Science.

70 METADEX (Metals Abstracts Index)

P American Soceity for Metals, Metals Information, Ohio 44703, USA.
V IRS, DIALOG
S All aspects of Metals

71 NASA (National Aeronautics and Space Administration)

P NASA Scientific and Technical Information Branch, Washington DC, 20546, USA.

V IRS, NASA

S Aeronautics and Space technology

PV Scientific and Technical Aerospace Reports (STAR) and International Aerospace Abstracts (IAA)

71 NATIONAL INSTITUTE OF MENTAL HEALTH (NIMH)

P National Clearing House for Mental Health Information, Fishers Lane, Maryland, USA.

V BRS, DIALOG

S Mental Health literature

72 NATIONAL NEWSPAPER INDEX (NNI)

P Information Access Corporation, 404 Sixth Aveneu, California, USA. 1979.

V DIALOG

S Full coverage of the New York Times, Wall Street journal and Christian Science Monitor. Business, Current affairs.

73 NCJRS (National Criminal Justice Reference Service)

P National Criminal Justice Centre, P.O.B. 6000, Rockville, Maryland 20850, USA. 1972.

V DIALOG

S Criminal Justice and law enforcements

74 NDEX (Newspaper Index)

P Bell & Howell Co, Microphoto Division, Ohio 44691, USA.

V SDC

S News and Current affairs reportage form New York Newspaers.

75 NEWSEARCH

P International Access Corporation, 4046th Avenue, California, USA.
V DIALOG
S Daily index to articles, reviews from 400 American Newspapers.

76 NTIS (National Technical Information Service)

P National Technical Information Service, Deaprtment of Commerce, Springfield, Virginia 22161, USA. 1964.
V BRS, CANOLE, DATA-STAR
S Technical and Scientific Reports from U.S. Government Agencies
PV Government Reports Announcemets and Index (GRA & I)

77 NUCLEAR SCIENCE ABSTRACTS

P US Dept of Energy, Technical Information Centre, Oak Ridge, Tennesse 37830, USA.
V
S Nuclear Science

78 NYT INFORMATION SERVICE (New York Times Information Service)

P New York Times Information Service Inc, 1719 A Route 10, New Jersey 07054, USA. 1969
V BRS, NYT
S World News

79 OCEANIC ABSTRACTS

P Data Courier Inc, Louisville, Kentucky 40202, USA. 1964.
V IRS, DIALOG, SDC
S Oceanology and related subjects.

80 OLJE - INDEKS (Oil Index)

P Norks Senter for Informatik, (NIS), Oslo 3, Norway.
V NSI
S Oil and Petroleum

81 PAIS INTERNATIONAL (Public Affairs Information Service International)

P Public Affairs Information Service, Inc, 11W 40th Street, N.Y. 10018, USA.
V BRS, DIALOG
S Public affairs and Policy on social, economic and political problems.

82 PAPERCHEM (Papaer Chemistry)

P Institute of Paper Chemistry, P.O. BOx 1039, Wisconsin 54912, USA. 1968.
V SDC
S Paper and pulp manufacture

83 P/E News (Petroleum/Energy Business Index)

P American Petroleum Institute, 156 William St, N. York, USA, 1975
V SDC
S Petroleum and Energy business news

84 PESTDOC (Pesticidal Literature Documentation)

P Derwent Publications Ltd, Rochdale House, London
V SDC
S Pesticides

85 PHARMACEUTICAL NEWS INDEX (PNI)

P Datacourier Inc, Kentucky 40202, USA.
V BRS, DIALOG, IRS
S Pharmaceuticals, Drugs and Cosmetics

86 PHILOSOPHERES INDEX

P Philosophy Documentation Centre, Bowling Green State University, Ohio, USA.
V DIALOG
S Philosophy

87 PHYSICS ABSTRACTS

P INSPEC, London 1969.
V BRS, CAN/OLE, DATA-STAR, DIALOG, SDC
S Physics

88 POLLUTION ABSTRACTS

P Data Courier Inc, Kentucky, USA.
V BRS, DATA-STAR, DIALOG, SDC
S Pollution

89 POPLINE

P Population Information Program, John Hopkins University, Maryland 21205, U.S.A. 1972.
S Population

90 POPULATION BIBLIOGRAPHY

P California Population Centres, University of N. Carolina, N. Carolina 27514, USA.
V DIALOG
S Population

91 PREDICASTS FILES (PTS) (Predicasts Terminal System Files)

P Predicasts Inc, University Circle Research Centre, Clevelan, Ohio 44106, USA.
S Business and Industry

92 PROMT (Predicasts Overview of Market and Technology)

P Predicasts Inc, 1101 Cedar Avenue, Clevelan, Ohio, USA. 1972.
V DATA-STAR, DIALOG, SDC
S Historical and projected data on markets, world economy

93 PSYCHOLOGICAL ABSTRACTS (PSYCHABS)

P American Psychological Association, 1200, 17th st, N.W. Washington, D.C. 20036, USA.
V BRS, DIALOG, DIMDI, SDC
S Psychology

94 RAPRA ABSTRACTS

P Rubber & Plastics Research Association of Great Britain, Shawbury, Shrewbury, Shorpshire, U.K. 1972.
V IRS, DIALOG
S Rubber and Plastics

95 RILM ABSTRACTS (Reportoire International de Literature Musicale)

P International RILM Centre, University of New York, NY 10036, USA.
V DIALOG
S Music

96 RIVE (Resources in Vocational Education)

P National Centre for Research in Vocational Education, Ohio, Columbus, ohio, USA.
V DIALOG
S Vocational and Technical education

97 SAE ABSTRACTS (Society of Automotive Engineers Abstracts)

P Society of Automotive Engineering Inc, 400 Commonwealth Drive, Pennsylvania 15096, USA.
V SDC
S Automotive and Transportation technology
PV SAE Cumulative Index

98 SAFETY

P Cambridge Scientific Abstracts Inc, 6611 Kenilworth Avenue, Maryland, USA. 1975.
V SDC
S Safety Science and Industrial and Occupational safety

99 SCISEARCH (Science Citation Index)

P Institute for Scientific Information, 325 Chestnut St, Pennsylvania, USA. 1974.

V BRS, DIMDI, DIALOG
S Interdisciplinary including Acoustics, Agriculture,Anatomy
PV Science Citation Index

100 SDILINE (Selective Dissemination of Informaiton online)

P NLM, USA.
V BLAISE, DIMDI, NLM
S Medicine
PV Index Medicius

101 SHIP ABSTRACTS (SA)
P Norwegian Centre for Informatics, Oslo, Norway
V NSI Via SCANNET, SCANNET, P.O.Box 5103, Sweden.
S Ship technology

102 SOCIALSCISEARCH (Social Science Citation Index)

P Institute for Scientific Information (ISI), USA.
V BRS, DIALOG, DATA-STAR, SDC
S Social and Behavioral Sciences

103 SOCIOLOGICAL ABSTRACTS

P Sociological Abstracts Inc. P.O.B. 2206, California, USA.

V BRS, DIALOG
S Sociology

104 SPIN (Searchable Physics Information Notes)
V DIALOG
S Physics
PV Current Physics Index

105 SPORT

P Sport Information Resource Centre, Ottawa, Canada
V SDC
S Sports
PV Sports and Recreation Index

106 SSIE CURRENT RESEARCH (Smithsonian Science Information Exchange)

P Smithsonian Science Information Exchange, Washington, DC. USA.
V BRS, DATA-STAR, DIALOG, SDC
S Reports of the current and recently completed researches in various fields like Agriculture, Biological Science etc.

107 SURFACE COATING ABSTRACTS (SCA)

P Paint Research Association of Gr. Britain, Middle Sex, U.K.
V DIALOG
S Paint and surface coatings
PV World Surface coating Abstracts

108 TITUS (Textile Information Treatment Users' Service)

P Institute Textile de France, 35 Ruedes Abondance, 92100 Boulgenesur Science, France
V SDC
S Textiles

109 TOXLINE (Toxicology Information online)

P NLM, USA.
V BIAISE, DIMDI, NLM
S Toxicology, Drug Chemistry, Pharmacology

110 TROPAG

P Royal Tropical Institute, Amsterdam, Netherlands
V SDC
S Agriculture in tropical subtropical regions
PV Abstracts on Tropical Agriculture

111 TULSA (Petroleum Abstracts)

P University of Tulsa, Information Service Division, Oklahama, USA.
V DIALOG
S Oil and Natural gas exploration

112 UPSD (United States Political Science Documents)

P University Centre for International Sutides, University of Pittisburgh, Peesylvania, U.S.A.
V DIALOG, SDC
S Political Science

113 WATERLIT

P South African Water Information Centre (SAWIC), Pretoria, South Africa.
V SDC
S Water resources and related subjects

114 WELDSEARCH

P The Welding Institute, Abington Hall, Cambridge, U.K.
V DIALOG
S Welding of metals and Plastics

115 WORLD TEXTILES

P Shirley Institute, Manchester, M208 RK, U.K.

V DIALOG
S Textiles
PV World Textile Abstracts.

116 WPI (World Patent Index)

P Derwent Publications, U.K.
V SDC
S Patents

117 WTI (World Translations Index)

P International Translations Centre, Deft, Netherlands.
S Translations of literature to all fields of Science and Technology from Eastern Europe and Asiatic language into W. Europe.

BIBLIOGRAPHICAL REFERENCES

Note: 1 *The following is the list of documents cited in the* text.

2 Column 1 gives the serial number of the respecctive documents.

3 Column 2 gives the number of the section (Sec.No.) containing the references.

Sl.No.	Sec.No.	
1.	B-12	ABBAS, Ibrahim Guidelines for direct cataloguing of documents in bibliographic databases with computer application. Rilisar bulletin 3(2) 1985. p.5-11.
2.	F-67	AFFIECK, Jennifer International software database and microcomputer index now available on DIALOG. LAISE 13(4) Jan/Feb 1983. p.16-18.
3.	E-50	Affordable databases: Information utilities and bibliographic retrieval. Part II. Acess. Microcomputers in libraries 2(1) Jan 1982. p.8.
4.	E-43	AITCHINSON, T.M Online and the database producer. Journal of information science 9(1) 1984. p.75-80.
5.	E-40	ARNOLD, E One database on many systems. Library journal 109(18) 1984. p.1008-1010.
6.	F-57	ATKINSON, Steven D. In search of research studies in online database. Online 7(2) Mar 1983. p.51-63.
7.	H-145	BAHR, Marvin. F MARS Online marketing intelligence from PTS. Database 9(5) Oct 1986. p.38-42.
8.	F-66	BAKER, Robert and Others Two bibliographic database systems supporting the EPA Air Pollution/Acid preciptation research program. In: 45th ASIS Annual Meeting proceedings. 1982. p.18-22.

9. F-80 BALASUBRAMANIAN, V. and BHATTACHARYA, A.
Iron and Steel online search system.
Online Review 9(3) Jun 1985. p.241-252.

10. H-129 BARRIBEAU, Susan
Resource for Women: the catalyst database.
Special libraries 76(4) 1985. p.290-294.

11. N-210 BARTENBACH, Bill
The impact of optical disc publishing on the information communicty by CD-ROM-Read Only Memory.
Inspel 20(4) 1984. p.205-220.

12. F-79 BAS, M.J.
Building a useful geochemical database.
Outlook on research libraries 8(9) 1986. p.1-3.

13. G-120 BAXTER, Paula. A.
Using an art database in academic library.
Art documentation 2(3-4) 1983. p.89-90.

14. H-138 BAYER, Bernard
The symbolic relationship of batch and online services.
Online review 8(2) 1984. p.9-14.

15. G-123 BELNA, Alison and others
Olympic information in the SPORT database.
Database 7(3) 1984. p.20-26.

16. C-17 BIBBY, Lindsay and EAST, Harry.
Marketing of databases produced in the United Kingdom.
Journal of information science 12(1) 1986. p.23-30.

17. S-219 BLACKMAN, M.J.R and others.
Searching organic chemical structures: A comparison of online access to Chemical Abstracts and the corresponding U.K. Patent Office Search System.
World Patent information 8(1) 1986. p.20-28.

18. H-131 BODLEY, Margaret
Family resources database: A system design to meet information needs in an engineering discipline.
Online review 8(1) 1984. p.41-56.

19. F-69 BOOTHER, John
A graphical approach to reaction retrieval in organic chemistry.
Chemistry and industry 21(1) Jan 1985. p.68-69.

20. S-224 BRADSHAW, Janice
Evaluation of BIOMED and ISTPB, two new literature databases from the Institute for Scientific Information.
Online Review 7(3) Jun 1983. p.221-226.

21. F-100 BRAERING, Naomi. C
The MINIMEDLINE System: A library based end user search system.
Bulletin of the Medical Library Association 73(2) 1985. p.138-145.

22. G-127 BRAND, Alice and KINZIE, Lenora
A comparison of online access to psychoanalytic literature.
Database 7(1) Feb 1984. p.58-63.

23. F-76 BRANSFORD, John S
Managing everchanging online databases.
In: National online Meeting Proceedings. 1984.
p.33-36.

24. G-119 BRUCE, John
New computer databases in the arts.
ARLS/ANZ news. No.16. Feb 1984. p.35-39.

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SUBJECT INDEX

Note : i) The following is an alphabetical index to the ideas presented in the text.

ii) It does not include the names of persons referred to, for it is covered in the Bibliographical References.

iii) The index number given against each entry is the Section number in which it occurs.