LIBRARY AUTOMATION IN INDIA

A select annotated bibliography

DISSERTATION
SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
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BY
MAZHAR KHAN
Roll. No. 96 LSM - 16
Enrol. No. AA - 4336

UNDER THE SUPERVISION OF
Mr. S. Mustafa K. Q. Zaidi
Reader

DEPARTMENT OF LIBRARY & INFORMATION SCIENCE
ALIGARH MUSLIM UNIVERSITY
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This is to certify that the M.L. & I.Sc. dissertation of Mr. Mazhar Khan on 'Library Automation in India: A select annotated bibliography' was compiled under my supervision and guidance.

(S. Mustafa K.Q. Zaidi)
READER
Dedicated
to the
Loving Memory of
My (Late) Father
and to
My Loving Mother
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(MAZHAR KHAN)
INTRODUCTION TO BIBLIOGRAPHY

AIMS AND SCOPE

Due to the uncontrolled growth of knowledge the face of librarianship in the recent past has changed a great deal. The traditional library is no more able to cope with the mode of explosion; of knowledge and is not able to process it and provide to the potential users.

With the advent of information technology, that is the influence of computers in the library process and information services, every library is looking forward for automation.

In India automation is taking place at a fast pace to cope with international needs and compete with international information systems in every field. A large number of information systems are working locally linked with international systems to fulfil the demands of their clientele with the establishment of INFLIBNET providing grants to the libraries for automating their process to run the network, the automation process has got a boost.

In this bibliography I tried to cover all aspects of library automation in India which would be useful to all those who have interested in the field of library automation particularly in India.
METHODOLOGY

The procedure followed in preparing the bibliography was as follows:

1. The secondary sources such as Index India and Guide to Indian periodical literature were consulted to approach primary sources in Maulana Azad Library, A.M.U., Aligarh.

2. The relevant bibliographical detail were noted down on 5" x 7" cards following the ISI standards.

3. On compilation of the abstracts subject heading were assigned, subject headings are completely coextensive of the extent possible.

4. The subject headings are arranged in an alphabetical sequence of various elements.

5. In the end two separate alphabetical indexes were given, author index, title index, providing reference to various entries by their respective numbers.

The primary sources were consulted in the following libraries:


4. Central Reference Library, Delhi University, Delhi.

STANDARD FOLLOWED

The Indian standard recommended for bibliographical reference (IS:2381-1963), titles of periodicals are written in full form. In certain cases, where the said standards became helpful I have preferred own judgement (local variation).

SUBJECT HEADINGS

Attempt has been made to give coextensive "subject headings" as much as possible and allowed by natural language if more than one entry comes under the same subject heading. These are arranged alphabetically by the author(s) name, or by periodical/news papers name.

ARRANGEMENT

The entries in the bibliography are arranged alphabetically among the subject headings.

The entry element of the author is in capitals, followed by the secondary element in parenthesis using upper and lowers and then the title of the articles, subtitle (if any), then name of the periodical being underlined followed by the volume, issue number, the year, the month in abreviated form, giving by using inclusive notation of the pages of the articles. Then each entry is followed by indicative, annotative and descriptive abstracts of the article.
Entries of periodical are arranged as follows:

a) Serial number
b) Name of the author(s)
c) A full stop (.)
d) Title of the contribution including subtitle and alternative title if any
e) A full stop (.)
f) Title of the periodical (underlined)
g) A full stop (.)
h) Volume number
i) Comma (,)
j) Issue number
k) A semi colon (;)
l) Year
m) a comma (,)
n) Month
o) Comma (,)
p) Date
q) Semi colon (;)
r) Inclusive pages of the article

SAMPLE ENTRY


Barcode is not a new technology. Barcodes are self
contained messages with information encoded in a series of black bars of varying breaths and series of white spaces between every two of them. These codes have found varieties of applications in different fields, including library and information services. The features, advantages and use of barcode system in libraries with particular reference to its implementation in Space Applications Centre (SAC) library have been discussed.

Explanation

The article is taken from the Annals of Library Science and Documentation which is titled as written by Dharmista R. Patel in 43rd volume, in the 1st issue number of the March of the year 1996 on pages given against this entry.

ABSTRACT

The entries in the bibliography contain abstracts giving the essential information about the articles. Attempts have been made to prepare indicative abstract, so that in most of the cases users needs are fulfilled with abstract itself.

INDEXES

This part of the bibliography contains author,
title indexes in alphabetical sequence. Each index gives the specific entry or entries in the bibliography.
PART - I

Introduction
INTRODUCTION

Advances in computers, satellites, laser and optical fibres are triumphantly driving the information technology towards the 21st century. The technological revolution has altered the entire library ecology which is leading to substantial changes in the structure of libraries, revenue base for operations and in developing competence of library professionals and users. Developments in electronic transmission methods and magnetic storage devices have enabled the managing of ever increasing volume of information at low cost and with increased effectiveness. The future libraries will have a number of database and available on different computer system and accessible to all users. The librarians will be able to call for the library catalogue, bibliographical databases and other information at any workstation.

Library automation\(^1\) refers to the processing of routine clerical functions in the library using computers or other mechanical/semi-automatic equipment, tools and techniques. Recently, in India, more and more libraries are turning to information technology for automation. Already a large number of libraries in the world have automated one or more of their functions/library services.

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1. Entry No. 110
The characteristics of a computer system that are particularly significant for libraries are the following.

1. It can store large quantities of information. For example, an entire library, catalogue can be stored on one or more magnetic disks on a computer.

2. It can process information rapidly and accurately. For example, a computer can be made to manipulate bibliographic data to produce catalogue cards, a stored list of books etc.

3. Information stored in the computer system (e.g. on magnetic discs, can be searched for and retrieved rapidly: a library's catalogue stored on magnetic disk can be searched for by author, title or key word. Search in the computer system can be communicated at high speed over telecommunication lines to remote locations (called terminals) connected to the computer.

Need for Automation

The ever increasing number of documents in various physical forms, books and nonbook, printed and nonprinted, published and unpublished, graphic and audio visual, magnetic tape and other forms, has been making the library situation be wildering. The nature of user's needs and

2. Entry No. 2
requirements has also been changing. In a library situation, all these pose problems in selection acquisition and organisation of documents in various physical forms. In addition to this, libraries are gradually becoming information centres, particularly in fast developing subject areas, where generation retrieval and dissemination of information through the creation of data bases and systematic information services are felt to be essential.

The need for automation in libraries is felt because of work-load in all spheres of libraries activities. It is essential to have the day to day work updated and to clear the real work and backlog.

In this way, mainly the two situations in libraries:

i) number of documents and their nature.

ii) characteristics of information and its handling, make their management practically impossible by manual methods only.

Increasing volume of information on the one hand and increasing number of users and their specialised needs on the other hand, requires newer methods for organizing information and new services such as the SDI service became possible only because of computer.
Automation is very much needed for the following reasons:

- to provide accurate service.
- to provide efficient service.
- to control the rapid growth of information.
- capable of being operated by all users.
- capable of satisfying the users.
- possible to link the system into other existing system.
- proved to be economical.
- improved control over library collection and library operations.
- improvement in the existing library services as well as introduction of new services.
- avoiding duplication of work.
- enabling scholars, researchers, teachers and students especially those located in far off places to have access to information and documents available in libraries.
- effective sharing of resources among the libraries.

Objectives of Library Automation

The broad objectives of any library's automation programme may be said to as follows:

3. Entry No. 6
4. Entry Nos. 198,199,200
i) Improves the efficiency of a given function. For instance an automated book acquisition system enables faster processing of book requests into book orders and of books received, better management of budgets, etc.

ii) If a library catalogue is made computer-readable and interactively searchable, the online catalogue can be used to provide for greater accessibility to the library holding than by a card catalogue.

iii) Relieve professional manpower of tasks which are routine, repetitive or clerical.

iv) Improve the cost efficiency of library operations. This is often possible because a single input is used in several operations or processes.

**Fields of Library Automation**

Since the 1960s, libraries have used technology in general and computers in particular, to automate a wide range of administrative, public and technical services tasks.

The areas that have been automated or application areas fall into the following broad categories:

5. Entry No. 180
A) Library housekeeping operations and services.
B) Information storage, retrieval and dissemination.

A) **Housekeeping Operations and Services**

The library housekeeping jobs are performed mainly for controlling the stock of the library and the circulation of materials. These jobs include selection, ordering, acquisition, processing, cataloguing and circulation control. The jobs also include maintenance and updating of the catalogue, 'chasing' the suppliers, sending reminders, getting book selection tools, participating in cooperative cataloguing preparing union catalogue and the like. The computer can present the existing picture of the library stock by describing and keeping records of the whereabouts of each item of the stock.

The housekeeping operative in a library that have been automated successfully are:

1. **Acquisition of books**,\(^7\)
   i) Book selection
   ii) Ordering
   iii) Accessioning

2. **Cataloguing**,\(^8\)

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6. Entry No. 74.
7. Entry No. 7
8. Entry No. 20, 120
3. Circulation
4. Serials control

B) Information Services

In the field of information retrieval, the computer can produce indexes and file them. These may be printed when required. The computer can also be used for making current awareness searches as well as retrospective searches. The computer based information retrieval systems has been very effective, because of the availability of large files of bibliographic records.

The application of the computer to information services comprises generation and collection of information, information retrieval, current awareness service, selective dissemination of information, computerised databases, online searching information transfer and so on.

Pre-requisite for success

1) As in USA and UK the developers of library of software in India should also carry out comprehensive research in the design of friendly interfaces including the use of artificial intelligence.

9. Entry No. 22
10. Entry Nos. 177, 178, 195
intelligence and graphical user interfaces in their software development.

ii) Govt. of India should be liberal in its investment and economic policies to encourage private sector investment in information technology industry.

iii) Library and information centres should give highest priority to improving their services by providing easier and wider access to documents and information for their users. They should follow integrated library management system as a whole.

iv) Technology alone cannot change the overall situation. Therefore, change in the practices of developers, library and information centres and in government policies is also needed.

v) A large scale efforts is required in the areas of training on software platforms and the process for software engineering with utmost emphasis and quality.

Library automation requires close interaction between the computer scientist and the library professional. However, retrospective conversion of data appears to be a major concern. It requires research,

11. Entry No. 78
setting up of policies, their adoption and enforcement of discipline. Library automation is somewhat successful, despite the problems mentioned earlier. The situation will improve when those involved in automation will discuss openly and candidly the difficulties and even the failures. The success and failure of any automation project rests largely in the hands of those who select/develop and those who use the systems.

Introduction of computer in library and has improved its image, functions and services to a large extent. Thus, the 21st century librarianship will not be content with the collection of information but will focus on its dissemination.

Library Automation in India  

India has acquired significant technological expertise in electronics and computer hardware technology. There is a strong infrastructure for computer application and spectacular advancement has been made in the ground, satellite communication and communication technology. Various types of computers are being used for industrial, commercial, research and development, image processing, simulation and various other purposes, and thus, a computer environment has been brought about in the

12. Entry Nos. 1, 3, 124
country. However, the progress of computer application in the library situation is not very much encouraging. Considering the number of libraries, their resources and the services rendered, library automation should have been made on a priority basis. Many organisation and institutions are using computers for the library and information services. But automation in the library as such, or the computer based library system, is not coming about in an integrated manner. A coordinated and cooperative computerised library system is yet to develop in India.

Computer application in libraries is being made in the country in two stages - operational and experimental. In some libraries having a mainframe computer system or a computer centre in the parent organisation, automation is being resorted to in the operational stage, in particular, for information storage and retrieval purposes, where libraries have computer support from their parent bodies, automation becomes easier and so, such libraries are switching over to it. Others are trying to get their own computer systems and are experimenting on that - they are in the experimental stage, so to say.

The libraries mentioned below are using computers for various library applications from house keeping to information dissemination. Some of them are in the
operational stage and some of them are in the experimental stage. But the list is neither complete nor exhaustive; rather, these are the examples of computer application in the library situation in India.

The Bhabha Atomic Research Centre (BARC), Bombay, has a BESM-6 computer having 8 drives of 7.5 M bytes each. It has heavy duty line printers and a macroprocessor-based interactive system using floppy disc drives to provide interactive job facility. BARC has two RRIME P450 satellite computers. Each equipped with 512 K bytes of error correcting MCS memory, 128 M bytes of disc storage, two 800/1600 BPI tape units, an one line printer, are card reader and eight time sharing display terminals. These satellite systems have the capability of being linked to the large control computer system.

The SDI is run on the Haney well-400 computer system with a package programme called AFSARI (Automation for storage and retrieval of information). The high level language used is COBOL. Two current awareness bulletins are prepared by AFSARI (1) a bibliography of current reports, and (2) a list of additions giving bibliographic details of reports and books acquired in the library. The serials holding record is also brought out regularly. Computerisation has been introduced for house keeping services as well.
The Tata Institute of Fundamental Research (TIFR), Bombay, has acquired recently the CYBER-730 system. This computer system consists of 2 CPU's (730's, 262K words 60-bit) memory, around 3000 megabytes disc storage, 7 magnetic tape units, 2 printers, 1 card-reader, 2 plotters and 40 display terminals including 8 graphic terminals. In addition, three computer systems have also been set up - one DEC VAX.11/780 located at TIFR and two prime 450's located at the Radio Astronomy Centre, Bangalore, and at PPED, Bombay, with the appropriate peripheral units. These systems are also capable of working as stand alone systems for most of the computing load generated at remote stations.

Computer systems with a large number of interactive terminals operate under powerful field-proven operating systems providing a multi-programming and time sharing environment. TIFR has a battery of software tools for programme development and debugging, and a wide range of software products to meet the scientific and data processing requirements in various application areas.

The TIFR library produces a monthly acquisition list with a keyword index, cumulated quarterly. The same format is used to prepare subject-wise catalogues under

Quoted by Piyushkanti Mahapatra, the Computer in Library Services, pp. 202-4.
the disciplines of mathematics, physics and astronomy, chemistry, biology, engineering and technology, computer science, linguistics, humanities, social sciences and generalia. The report literature is properly indexed and the list of periodicals is produced at regular intervals. SDI and current awareness services are also available. The housekeeping services and information storage and retrieval processes are computerised.

The Indian National Scientific Documentation Centre (INSDOC), New Delhi, rates its computerised SDI service on IBM 370/155 computer system located at the Indian Institute of Technology, Madras. In New Delhi, INSDOC operates with the IBM 360/44 system of the computer centre, Delhi University and with the HP1000 services minicomputer system located at the INSDOC premises by the National Institute Centre (NIC). It has also communication with the host computer system the CYBER 720 at NIC. INSDOC uses FORTRAN, PL/I and the assembly language INSDOC has also developed package programmes for processing data relating to the union catalogue to be run on the IBM 360/44 computer system.

The computer facility at INSDOC is being utilized mainly for the compilation of regional union catalogues of scientific serials, indexes to Indian Science Abstracts.
(ISA) with the author and keyword subject index, centralized listing of scientific periodicals and directories.

The Defence Science Information and Documentation Centre (DESIDOC), New Delhi, has computerised the information storage and retrieval process. DESIDOC developed the software for creating a database of scientific information and for online searching and information retrieval to be run on the PRIME 750 computer system at the Defence Research and Development Organisation (DRDO), New Delhi. Input to this data base is provided with the documents acquired in the Defence Science Library. Computer based SDI service and retrospective information service are provided by DESIDOC. Planning has been made for online access to foreign data bases, and its implemetation is in process.

Planning has also been made for a computerbased information network covering the libraries and the technical information centres of the Defence Research and Development Organisation (DRDO) laboratories and establishments. The planning has been made to organise DRDO Information Retrieval System (DRDO-IRS). The system will ensure the dissemination of information as quickly as possible under a centralised information system. It is envisaged that the system will provide project-oriented and mission oriented information.
The Reactor Research Centre (RRC), Kalpakkam, Tamil Nadu, has set up a computer centre to meet the needs of more than five hundred scientists and engineers. A scale general purpose computer system of the fourth generation technology, capable of computation in the multiprogramming batch mode as well as in the time sharing mode of operation, has been installed for this purpose. The centre has the CII Haney well Bull DPS-8 computer system as well as the IBM 370/155 computer system. The library and documentation centre uses a ISS interactive terminal linked with the Honey well computer system.

Several software developments have been made for library operations. The text pac on IBM 370/155 has been used for the preparation of the monthly subject index. A programme has been developed in COBOL 74 for preparing the subject index of reports to be run on CII Haney well. Software has been developed in PL/1 for library applications. The library and documentation centre is working for developing new software, as well as for the modification of softwares already developed for further library applications. The library is also using the LC MARC II format for recording bibliographic data with a view to interchanging with national and international data bases.

13. Entry No. 39
For library services, the computer is being used both for house keeping operations, such as acquisition, cataloguing circulation, serials control and the like, as well as for information storage and retrieval, such as preparing the subject indexes of serials articles and technical reports, the bibliographic database, etc. In the housekeeping area, necessary software has been developed for book ordering, providing vendor and subject-wise listing of journals being currently subscribed, circulation records and control, and other library applications. In the information service area, the Bibliographic Data Base (BDB) has been created with the library's holding. The Book Information Retrieval System (BIRS) has been designed with the facility of showing subject relationships. Subject keyword files based on the main file have been created. Database files and user's profiles have contributed to make the library computerization very much result oriented.

The Bharat Heavy Electricals Limited (BHSEL), Tiruchirapalli, Tamil Nadu, has a computer system of ICL 2950 with a 32 KW memory, magnetic tape drives.

14. Entry Nos. 7,8,9
15. Entry Nos. 21,22,23,24
9. Flowchart programme

10. Flowchart of SDI.
magnetic tapes, magnetic discs, an EDS 200 discpack, a line printer and other peripherals. The software system support comprises a COBOL compiler, data management programmes and the management software. The system is used for computer-based information storage and retrieval services. There are both the systems - offline batch mode and online interaction. BHEL has comprehensive database files for all kinds of bibliographic searches as well as non-bibliographic database. BHEL attempted inter­connecting of computer systems situated at distant locations. Through a telecommunication network for remote access to more databases. The computer is also being used for printing catalogues, doing acquisition jobs and making serials lists, serials and circulation records.

BHEL, Hyderabad has an ICL 2960 computer system used for information storage and retrieval services and creating bibliographic and non-bibliographic databases. It has acquired a Texas Internation TI 990 computer system for application to circulation control services with various functions. It also provides computerised SDI service. It is compiling a union catalogue of periodicals acquired in various BHEL libraries. It is also compiling a catalogue of special materials. BHEL, Bhopal,

16. Entry Nos. 6,148,172
operates computerized service with the ICL 1901 computer system using the COBOL language. A bibliographic database has been created for information service.

The IDL Chemicals Limited, Hyderabad, offers online interactive computer facility for users in the library. It has a varian V-76 mini-computer system. This system offers online searching with the facility of combination of keywords by the problem operators, SDI services in the batch mode, data files of serials holding, data files of current periodical subscription and other data files of current periodical subscription, and other data files. IDL has also a micro-computer system comprising dual processor, 8085 and 8088, a 256 Kb memory, dual double sided double density floppy drives, a 20 Mb winchester drive, two semigraphic terminals and two printers. Programmes can run on EPROM. The microcomputer provides a multiprogramming operating system support up to 16 terminals and simultaneous processing of 8-bit as well as 16-bit programmes.

The software package include Editor and Wordstar for programme development, BASIC interpreter and compilers for COBOL, FORTRAN and PASCAL. The system is used for a few house keeping operations. It is operated for acquisition records, book ordering, sending reminders with lists of books to vendors, keeping vendors' records, etc. It is being used for other house keeping jobs also.
The Physical Research Laboratory (PRL), Ahmedabad, has an IBM 360/44 computer system having FORTRAN IV language application. Emphasis has been given on serials control and a periodical/management systems (PMS) has been developed. The system involves serials ordering, serials recording, sending reminders for non receipt of serials, etc. A data base has been created with the contents of the serials. Current awareness service has also been arranged.

The National Aeronautical Laboratory (NAL), Bangalore, uses a micro computer for acquisition and circulation control. WAL also provides. Computerised serials holding lists and performs jobs relating to serials control.

The Indian Standards Institution (ISI), New Delhi has a HP1000 computer system. ISI provides access to the database created on standards, both Indian and foreign. ISI is also creating a comprehensive database on standards and standard-like documents published by various government departments, research institutions and trade organisations.

The Structural Engineering Research Centre, Roorkee, has created a computerised database of the holding of its library. The centre also prepares acquisition lists periodically and bibliographies on various subject fields.
The Electronics Commission, New Delhi, performs both housekeeping jobs and information retrieval by the computer. It has created a database of the holding of its library. It provides KWIC indexes for current awareness service and a database for information on all the areas of electronics.

The Indian Institute of Technology, Madras, has a computer Centre for education in computer science. It has an IBM 370/145 computer system. It is operating CAN/SDI service in collaboration with the Indian National Scientific Documentation Centre (INSDOC), New Delhi. It utilises computer facility for the preparation of indexes and information retrieval.\textsuperscript{17}

The Indian Institute of Technology, Delhi, has a computer centre with an ICL 2960 computer system. It utilises computer facility for serials control, preparation of serials holding lists, current and retrospective, and acquisition jobs.

The Steel Authority of India Limited (SAIL), Ranchi, has established a computer centre with a sophisticated fourth generation computer. It has 10 million characters of disc storage. Although it is being used currently for administrative purposes, yet steps are

\textsuperscript{17} Entry Nos. 151,152,153
being taken to use it for library and information services as well.

A list of institutions and organisation which are either using computers for library operations or experimenting on computer application in the libraries, is given below:

-- The Central Food Technological Research Institute (CFTRI), Mysore.
-- The Central Drug Research Institute, Lucknow.
-- The Central Machine Tools Institute, Bangalore.
-- The Regional Research Laboratory, Hyderabad.
-- The computronics India Limited, Bombay.
-- The Tamil University, Tanjore.
-- The Administrative Staff College, Hyderabad.
-- The Central Leather Research Institute, Madras.
-- Teh SIET Institute, Hyderabad.
-- The Bharat Heavy Electricals Limited, Hardwar.
-- The Central Water & Power Research Stations, Pune.
-- The Explosives Research & Development Laboratory, Pune,
-- The Hindustan Machine Tools Ltd., Bangalore.
-- The Mishra Dhatu Nigam Limited, Hyderabad.
-- The Survey of India, Dehradun.
-- The Central Glass & Ceramic Research Institute, Calcutta.
The capability and facility of the computer, the diminishing cost, feasibility of cost effectiveness in the library operation, availability of mini and micro computers and data processing units, marketing of a good number of indigenous and small computer systems, increased awareness of the use of the computer in the library and information services - all these factors have created a congenial environment for computer application in library and information services.

There are certain impediments also. In institutions and organisations, where there are in-house computer systems for research, management or other purposes, the attached libraries have to accept the hardware and the software already in use there for library applications as well, but this may not always yield the best results so far as library services are concerned. The institutions and the organisations located all over the country procure computer systems, and develop software and systems applications quite independently. Thus, lack of computer compatibility possess certain problems. The varieties of hardware and software inevitably causes non-uniformity in programmings, record formats, applications and output formats, and machine readable package operations. This
situation obviously stands in the way of library cooperation and coordination, particularly in the matter of resource sharing.

Libraries which acquire indigenously manufactured mini or micro computer systems, may not face such problems. Several indigenous manufacturers produce both small and large computer systems which may be interconnected at a later stage. In this way computer capability may be increased. Computer systems are also available for a specific library application or for a wide range of library and information service operations.

At present a number of good packages are available abroad as well as in India. Computer networking is also a well established field. In India, both these fields are still in developing phase, and the credit goes to special libraries in our country. These libraries are in the R&D institutions under the council of Scientific & Industrial Research (CSIR), Indian Council of Agricultural Research (ICAR), and the libraries belonging to the private sector and public sector industrial R&D organisations such as Technical Information Centre of Bharat Heavy Electricals Ltd. (BHEL), and Steel Authority of India Ltd. (SAIL).

18. Entry No. 163
International Organisations such as International Crops Research Institute for the Semi Arid Tropies (ICRISAT) have also made some useful contributions.

Considerable impetus to the use of new information technology in special libraries has been provided by the Dept. of Scientific and Industrial Research through the sectoral information centres established in some of the CSIR Laboratories under National Information System for Science and Technology. NISSAT is playing an important role for different training programmes, software development projects and in transfer of technology to different special libraries in the country. Other special libraries like INSDOC, DESIDOC, NIC, SAIL, BHEL, ICRISAT etc. have successfully developed software for library automation. Some public sector organisations like CMC Ltd., Calcutta, Kasba Systems Software, Madras; U&I Software Pvt. Ltd., Bombay; Wipro Information Technology, Secunderabad, etc. have also developed library automation software.

Unlike special libraries, academic libraries in India functions in a relatively less autonomous environment due to scarce resources. However, the UGC in 1989 took initiative to plan a country-wide academic
library and information network called INFLIBNET. This initiative has the potential to make a significant impact on operational efficiency and user services in academic libraries. INFLIBNET is taking care for development of academic libraries and organised the first National convention CALIBER-94 for automation of libraries in higher education and research institutes at Ahmedabad during 19-20 February 1994.

The convention discussed about the inability of libraries to cope up with the current information explosion due to budgetary constraints and the fast changing economic, social, cultural and scientific scenario and the ways and means to offer better services to the user employing the state of art information technology. Apart from INFLIBNET at the national level, regional library networks like BONET (Bombay) MALIBNET (Madras) and Pune Library Network, etc. currently under development are likely to bring forth significant improvements in the library automation scene.

In public libraries, there is no evidence of any activity nor of any planning for the introduction of new techniques with their limited funds; automation is still a dream for them.
**Library Automation Software**

In the recent years, library and information professionals are becoming more aware of the overwhelming importance of computer software packages specially available for automation purposes in the market, many public sector or private companies are developing software for library automation. CDS/ISIS is developed by Unesco and was made available free of cost to institutions in developing countries under a licence agreement. Efforts is automating library catalogues and designing automated text retrieval systems have largely been influenced by the availability of the CDS/ISIS. Increasing availability of training facilities in the package has also stimulated the interests of Indian library professionals towards the goal of automation. Thanks to the popularisation of CDS/ISIS by NISSAT in India, nor, most of the Indian libraries are using this package.

These are a number of other parties also involved in production of software for library applications. Some are manufacturers of computer, government agencies and others are consultant. Out of them, 12 packages are highly

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22. Entry No. 182
significant now for library automation. Although CDS/ISIS is not a software of Indian origin. It is highly popular in India. The library management software SANJAY based on the framework of CDS/ISIS is developed by DESIDOC for library housekeeping jobs such as cataloguing, acquisition, circulation, CAS/SDI, etc. MAITRAYEE has been developed under CALIBNET project for handling library related activities as SANJAY. CATMAN has been developed by INSDOC, for catalogue management in libraries of small to medium size.

The other nine selected packages, i.e. LIBMAN, ARCHIVES, WILYSIS, SALIM, LIBRARIAN, Library Manager, Integrated Library Management, Library Cataloguing System and SDI package vary in what they offer, differ in the equipment, requirements, cost, etc. A list of firms along with the name of the packages, system requirement and area of operation has been given in the Annexure.

Indian Software Industry

Significantly in the last few years there has been tremendous growth of computer software due to several reasons are: (a) India possesses the world's second largest pool of English speaking scientific manpower, and

23. Entry No. 8
24. Entry Nos. 191,193,194
<table>
<thead>
<tr>
<th>Name/addresses of the firm</th>
<th>Software package</th>
<th>System reqd</th>
<th>Area of operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. System Data Control Pvt. Ltd.</td>
<td>Library Manager (Menu driven System)</td>
<td>IBM PC XT 384 KB</td>
<td>Circulation control</td>
</tr>
<tr>
<td>Tieicon House, 4th Floor Bombay - 400 011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Uptron India Ltd.</td>
<td>SALIM (Menu driven system)</td>
<td>IBM PC AT/XT 640 KB</td>
<td>Circulation control</td>
</tr>
<tr>
<td>D6, South Ext-I New Delhi - 110 044</td>
<td></td>
<td></td>
<td>Stock verification Catalog card print Serials control</td>
</tr>
<tr>
<td>3. Pragati Computer Pvt. Ltd.</td>
<td>Integrated Library Management (DBMS)</td>
<td>IBM PC AT</td>
<td>Circulation control</td>
</tr>
<tr>
<td>8, 2nd Crescent Park Road Adyar, Madras - 600 020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Wipro Inf. Tech. Ltd. Sarojini Devi Road Secunderabad - 500 003</td>
<td>WILYSIS (C Language)</td>
<td>Wipro PC AT with 80 MB</td>
<td>Acquisition control Serials control Circulation control</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Datapro Consultancy Services II, Kubera Chambers, JM Road Pune - 411 005</td>
<td>LIBRARIAN (Clipper &amp; Foxbase)</td>
<td>IBM PC AT with 80 MB</td>
<td>Acquisition control Serials control Circulation control</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. INSDOC</td>
<td>CATMAN (dBase IV)</td>
<td>IBM PC XT with 680 KB</td>
<td>Catalogue control</td>
</tr>
<tr>
<td>14, Satsang Vihar Marg Special Institutional Area New Delhi - 110 067</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Ultra Business Systems</td>
<td>Library Catalogue System</td>
<td>LP/M86 DBMS-II</td>
<td>SDI service</td>
</tr>
<tr>
<td>2nd Floor, 157 Bangalore - 560 025</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Radig Cybernetics Pvt. Ltd. Anand Nagar Colony, Kharibatbad Hyderabad - 500 004</td>
<td>SDI, Package (dBase-II)</td>
<td>IBM PC XT</td>
<td>Acquisition control Circulation control Serials control Catalogue control &amp; SDI</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Minifax Electronics Systems Pvt. Ltd. 706, makers chambers Bombay - 400 021</td>
<td>ARCHIVES (Foxbase)</td>
<td>IBM PC XT</td>
<td>Database creation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Keshbah Systems Software 7, 2nd Street 1 Dr RK Salai, Mylapore Madras - 600 004</td>
<td>LIBMAN</td>
<td>IBM PC XT</td>
<td>Circulation control Acquisition control Reminder control IRS, Database</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. CMC Pvt. Ltd. 28, Camac Street Calcutta - 700 016</td>
<td>MAITRAYEE (DBMS)</td>
<td>IBM PC XT/AT 640 KB</td>
<td>Catalogue control Circulation control Acquisition control</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. DESIDOC Ministry of Defence Metcalfe House Delhi - 110 054</td>
<td>SANJAY (CDS/ISIS using PASCAL)</td>
<td>IBM PC XT/AT 640 KB</td>
<td>Acquisition control Circulation control Catalogue generation &amp; maintenance, CAS, SDI</td>
</tr>
</tbody>
</table>
(b) the low manpower costs which provide edge in the world market.

When the new software policy was introduced in November 1986, the software sales made a quantum jump from Rs 3 crores in 1980 to 175 crores in 1988. It is estimated that it will grow further to Rs 5000 crores in 1995 and will touch Rs 20,000 crores in the year 2000. Very few industries can boost of such an impressive growth. But the most interesting fact is that India occupies only 0.5% of the 100 million dollar global software market. So, there is a lot of scope for growth. India has so far controlled the inflow of information technology with a view to produce most of the equipment indigenously. At the same time it has given high priority to software export and many measures were taken by the government for its development. These include:

-- Creation of software technology parks.
-- tax exemption of profits from software exports, and
-- Exemption of 15% excise duty on hardware for software imports against 400% commitment for Indian businessmen and firms.

Problems

(a) Name of the Indian packages, with some exception,

25. Entry No. 166
Table 1. A check list of facilities available with some chosen library software packages

<table>
<thead>
<tr>
<th>Software package</th>
<th>Acquisition</th>
<th>Cataloguing</th>
<th>Circulation</th>
<th>Serial control</th>
<th>OPAC</th>
<th>Online help</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATMAN</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>CDS/ISIS</td>
<td>*</td>
<td>Y</td>
<td>*</td>
<td>*</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>DELMS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>GOLDEN LIBRA</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LIBRARIAN</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>LIBRIS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>LIBSYS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>MAITRAYEE</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>MECSYS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>MINISIS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>NIRMALIS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>SANJAY</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>-</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>TULIPS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>ULYSIS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>WILSYS</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>
fully supports all library functions.

(b) Indian packages have attempted to accept different systems in question and have not adhered to the internationally accepted standards.

(c) The packages abroad are increasingly emphasising on the incorporation of user friendly interfaces and the provision of online public access catalogues. But in India there is no emphasis on this aspect.

(d) Libraries abroad recognise integrated library management system and have a long history and tradition of centralised cooperative and shared cataloguing, and adherence to common standards in classification, cataloguing and indexing. On the other hand, in India, the key elements of the integrated library management system are missing in the software.

(e) Mostly, the software supplied may be faulty and inadequate service response is a common thing.

(f) Libraries are unable to define their data processing requirement quantitatively and are unaccustomed to the computer environment due to the lack of research and training aptitude of the library staff.

(g) Other major problems for library automation project are poor planning, designing and implementation of new technology for the library and information centres.
Library Networks in India

In the field of library science and traditional librarianship, India was not lagging much behind the advanced countries in the post. The country produced eminent library scientists and librarians whose contributions to the subject discipline were outstanding. Also, the spirit of library cooperation flourished and library resource sharing was practised by several libraries in the form of inter library loans, circulation of documentation lists, current awareness service and so on. Even library networking was done in an informal mode in certain cities in the country. The efforts of the Bombay Special Libraries Association (BOSLA) since 1978 in resource sharing among its member libraries is one such example. However, such efforts were mostly informal and limited in scale.

The networking efforts in various countries got a boost with the tremendous and fast developments in computer and communication technologies, which led to the implementation and successful operation of national and international computer communication networks. These networks were commonly used for business and commercial applications, but the libraries were quick to start

26. Entry No. 112,124,125
27. Entry No. 130
### Table 1. Status of Indian library networks

<table>
<thead>
<tr>
<th>Name of library network</th>
<th>Year of starting</th>
<th>Promoting agency</th>
<th>Whether regd. as a society</th>
<th>No. of participating libraries</th>
<th>Database dev. &amp; other activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADINET</td>
<td>1993</td>
<td>Soc., INLIBNET &amp; NISSAT</td>
<td>Yes</td>
<td>9</td>
<td>Library holdings database in progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Library automation in progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Training programmes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Database of current periodicals in member libraries</td>
</tr>
<tr>
<td>BALNET</td>
<td>1995</td>
<td>NISSAT</td>
<td>Yes</td>
<td>-</td>
<td>Activities will start after getting financial support from NISSAT</td>
</tr>
<tr>
<td>BONET</td>
<td>1994</td>
<td>NCST &amp; NISSAT</td>
<td>No</td>
<td></td>
<td>Online union catalogue of periodicals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Online request system for ILL</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>E-mail &amp; Internet access</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Online searching of foreign databases</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Database on computers and software</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CD-ROM database searching</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Database of contents of Indian periodicals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Software for OPAC</td>
</tr>
<tr>
<td>CALIBNET</td>
<td>1992</td>
<td>NISSAT</td>
<td>Yes</td>
<td>10</td>
<td>Library automation in progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Access to Internet and Knight-Ridder (Dialog)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CD-ROM database searching</td>
</tr>
<tr>
<td>DELNET</td>
<td>1990</td>
<td>Soc., NIC &amp; NISSAT</td>
<td>Yes</td>
<td>54</td>
<td>Books database (1.68 lakh records)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Members)</td>
<td>Multi-lingual books database</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>E-mail service</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Union list of current periodicals (11,000 records)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Database of Indian specialists</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Online searching of foreign databases</td>
</tr>
<tr>
<td>INFLIBNET</td>
<td>1991</td>
<td>UGC</td>
<td>Regn. in progress</td>
<td>54</td>
<td>Database of books (6.5 lakh records; 50,000 validated)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Training programmes for university library staff</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Software development</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Database of theses/dissertations (6,000 records)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Contents with abstracts (COPSAT) service</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Databases of experts, periodical holdings (60 libraries, 30,000 records)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Database of periodicals.</td>
</tr>
<tr>
<td>MALIBNET</td>
<td>1993</td>
<td>Soc., &amp; INSDOC</td>
<td>Yes</td>
<td>15</td>
<td>Current serials database of 50 libraries</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Journal holdings database (15 member libraries, 500 journals)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Journal contents database (100,000 records from member libraries)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>All INSDOC databases ported on MALIBNET (10 databases)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Online searching of these databases</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Automotive Engineering database (4,500 records)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Access to Internet and Knight-Ridder (Dialog) database</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CD-ROM database searching</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Library automation in progress</td>
</tr>
</tbody>
</table>

* Data collected from respective sources
efforts to make use of these networks for linking libraries for resource sharing among them. The success stories of libraries networks in the advanced countries like the Online Computer Library Centre (OCLC) (originally called the Ohio College Library Centre when it started in Ohio in 1967), the Washington Library Network (WLN), Research Library Information Network (SRLIN), in the USA, and the British Library Automated Information service (BLAISE) in UK, etc. are example of such cases.

In India, library networking efforts using computer communication technologies started during the late 1980's with the initiation of metropolitan city networks like the Calcutta Library Network (CALIBSNET) and the Delhi Library Network (DELNET) followed by the National level Information and Library Network (INFLIBNET) of the University Grants Commission (UGC). The UGC proposed INFLIBNET for networking libraries of all the institutions of higher learning and research and development. These networks, however started functioning in the 1990s only. Earlier, certain database producers in the government sector like the Biotechnology Information System (BTIS)

28. Entry Nos. 169,170
29. Entry Nos. 115,116,117
30. Entry Nos. 132,133,134
31. Entry No. 114
### Table 1. Resource libraries of MALIBNET

<table>
<thead>
<tr>
<th>S. No</th>
<th>Name of the Library</th>
<th>No of titles</th>
<th>Unique titles</th>
<th>Redundancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anna Institute of Management</td>
<td>17</td>
<td>3</td>
<td>82</td>
</tr>
<tr>
<td>2</td>
<td>Cancer Institute</td>
<td>63</td>
<td>22</td>
<td>65</td>
</tr>
<tr>
<td>3</td>
<td>Central Institute of Plastics and Engineering Technology</td>
<td>33</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>4</td>
<td>Central Leather Institute</td>
<td>151</td>
<td>79</td>
<td>47</td>
</tr>
<tr>
<td>5</td>
<td>Central Library, University of Madras</td>
<td>217</td>
<td>172</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>Centre for Advanced Study in Botany</td>
<td>23</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>7</td>
<td>College of Engineering</td>
<td>113</td>
<td>15</td>
<td>86</td>
</tr>
<tr>
<td>8</td>
<td>Connnemara Public Library</td>
<td>546</td>
<td>319</td>
<td>41</td>
</tr>
<tr>
<td>9</td>
<td>Crescent Engineering College</td>
<td>37</td>
<td>6</td>
<td>83</td>
</tr>
<tr>
<td>10</td>
<td>CSIR Madras Complex</td>
<td>79</td>
<td>18</td>
<td>77</td>
</tr>
<tr>
<td>11</td>
<td>Devenaya Pavanar Districentral Library</td>
<td>3</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>12</td>
<td>Entomology Research Institution</td>
<td>11</td>
<td>7</td>
<td>36</td>
</tr>
<tr>
<td>13</td>
<td>Ethiraj College</td>
<td>17</td>
<td>1</td>
<td>94</td>
</tr>
<tr>
<td>14</td>
<td>Geological Survey of India</td>
<td>21</td>
<td>10</td>
<td>52</td>
</tr>
<tr>
<td>15</td>
<td>Government Ophthalmic Hospital</td>
<td>5</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>16</td>
<td>Guindy Campus Library</td>
<td>75</td>
<td>26</td>
<td>65</td>
</tr>
<tr>
<td>17</td>
<td>Guru Nanak College</td>
<td>16</td>
<td>3</td>
<td>81</td>
</tr>
<tr>
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<td>Highways Research Station</td>
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<td>Indian Institute of Technology</td>
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<td>Indira Gandhi Centre for Atomic Research</td>
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<td>21</td>
<td>Justice Basheer Ahmed Sayeed Women's College (formerly SIET)</td>
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<td>Kilpauk Medical College</td>
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<td>23</td>
<td>King Institute of Preventive Medicine</td>
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<td>Loyola College</td>
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<td>M.S. Swaminathan Research Institute</td>
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<td>MScience-Institute of Mathematical Sciences</td>
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<td>Office of the Director of Fisheries</td>
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<td>Pondicherry Engineering College</td>
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<td>Post Graduate Institute of Basic Medical Sciences</td>
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<td>Ramakrishna Mission Vivekananda College</td>
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<td>School of Architecture and Planning</td>
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<td>Sri Amm Murugappa Chettiar Research Centre</td>
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<td>Tamilnadu Dr MGR Medical University Library</td>
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<td>Tamilnadu Forensic Science Laboratory</td>
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<td>Tamilnadu University of Veterinary and Animal Science</td>
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<td>Tansia-FNF Service Centre</td>
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<td>Technical Information Centre</td>
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<td>Technical Teachers Training Institute</td>
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<td>48</td>
<td>Tuberculosis Research Centre</td>
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<td>49</td>
<td>United States Information Service</td>
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<td>Zoological Survey of India</td>
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of the Department of Biotechnology (established in 1988) and the Indian Medlars Centre (IMC) which was established jointly by the National Informatics Centre (NIC) and the Indian Councils of Medical Research (ICMR) in 1987, started using the NIC's satellite based national level information network called NICNET. During the 1990s, CALIBNET and DELNET\textsuperscript{32} started providing some services and INFLIBNET also started functioning pending its registration as an autonomous society under the UGC. The 1990s have also seen the initiation of some more city library networks like the Bombay Library Network (BONET), the Pune Library Network (PUNENET), The Madras Library Network (MALIBNET),\textsuperscript{33} the Ahmedabad Library Network (ADINET),\textsuperscript{34} and so on.

**Planning Commission Efforts**\textsuperscript{35}

The Planning Commission, Govt. of India, has been taking considerable interest in library resource sharing and library networks. Its efforts in these areas have increased since the Seventh Five Year Plan covering 1985-90. The commission appointed a working group submitted its report in July 1984 which recommended among

\begin{itemize}
\item \textsuperscript{32} Entry No. 121
\item \textsuperscript{33} Entry No. 137,138
\item \textsuperscript{34} Entry No. 113
\item \textsuperscript{35} Entry Nos. 2,73,109
\end{itemize}
others interlinking of library systems through library networks. This report was to be considered for the Seventh Plan. The commission appointed another working group on libraries and informatics for the Eighth Five Year Plan. This working group again recommended among others interlinking of library systems in the country. This was followed by a similar exercise for the Ninth Five Year Plan for the period, 1997-2002. The commission again constituted a working group on libraries and informatics under the Department of Culture, Ministry of Human Resource Development, Government of India, which is expected to submit its report in May 1996. Apart from this, the planning commission also appointed in February 1995, a core Task Group to prepare an approach paper for enhancing inputs of science and technology and communication technology for library resource sharing. These initiative have led to increased efforts in the establishment of library networks and library automation in the country.

Present Scenario

The present status of library networking in India that most of the libraries covered by some network are creating databases of their holdings and in automating the
the library activities, the former being the first priority. Commonly, the periodical holdings are attended first in building up the databases as it takes less time than for the other types of library documents. This is followed by the databases of holdings of books, reports, dissertations, standards, etc. The library network centres (i.e., the coordinating agencies of the networks) also are concentrating on acquiring holdings of data bases of their member libraries and merging them to provide the user with access to the total records. They provide such access either by e-mail or online through the telephone network. In addition, these centres also try to provide a common software for database development and automation of library activities and services. Table 1 gives the details of status of some important library networks in the country.

**Database Development**

Development and maintenance of database is a skill-oriented as well as time consuming activity. The enormity of the task can be gauged if one considers the holdings of the major libraries in the country are given in Table 2.

In addition each of the libraries of major universities \(^{37}\) would have, on an average about two lakh

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37. Entry No. 31
publications/documents. If the databases of such holdings are to be developed using standard input format, rules and procedures, and to simultaneously maintain acceptable quality standards of the databases, the time normally required would be about 4000 mandays per lakh of documents if the data capturing is done manually. If other databases are used for downloading relevant records, the time may come down by about 40 percent.

**Impediments to the establishment of networks**

In the development or establishment of library networks, the following seem to be the main problem faced by the Indian libraries.

(i) It is difficult to enforce standards in data conversion for creating databases of library holdings particularly when different libraries do this job independently. Even if the same input format and data entry procedure (cataloguing rules, etc) are followed there could be a significant variation in the practices like depth of indexing slant in indexing or generating key words, and so on.

(ii) In a network, collections of large libraries tend to be overused and therefore, such libraries would
be unwilling to become part of the system unless there are compensating incentives.

(iii) Libraries generally do not have the necessary staff with adequate expertise in database development and in the use of network hardware and software. This necessitates organising training programmes frequently and also on the job training. The training programmes presently available are not adequate and they are to be provided on a much larger scale to cover all the interested library staff in the country.

(iv) If a library has already created a database of its holdings, fully or partially, using its own input format and other rules and procedures, it would be very reluctant to change them, if necessary, to join a network. This reluctance is mainly due to the cost of input required to effect the change.

(v) Many libraries do not have adequate resources for acquiring the hardware, software and other facilities for joining the network.

(vi) Many libraries do not have the software which is tailored to their procedures and which can function efficiently and effectively in a wide-area-network environment. They look for an efficient, integrated software for library automation and
database development. Many of the libraries presently use CDS/ISIS; but prefer to switch over to other software which can work more efficiently with large collections and users, for both the types of functions. There are a few such software packages available in the market in the country; but many libraries, particularly academic and public libraries, expect to receive it free of charge or at a nominal price. Some libraries which can afford to buy the package at market price expect proper customisation and efficient after-sales-support from the supplier which is not easily available to the satisfaction of the buyers.

(vii) Many libraries do not usually get adequate support from the managements of their institutions.

Possible Solutions

Libraries and library networks are making efforts to get over these impediments. However, while they may be able to solve some of the problems through cooperative efforts among themselves, they would need the help of supporting or funding agencies to solve many other problems, particularly those related to standardisation and quality control. For instance, trained manpower is not available for the data conversion job (to develop

39. Quoted by SS Murthy, Library Networks in India - An Overview, DESIDOC Bulletin of Information Technology,
databases). Also, none of the university departments provide adequate training in this activity. This situation therefore necessitates engaging raw library and information science post-graduates, providing training to them and then using them for the job. The libraries should however not recruit personnel on regular appointment for the creation of databases covering their back collections (retrospective conversion) as the recruits would not have adequate work once the backlog is cleared. It would be therefore preferable to engage external services on contract for this job to clear the backlog and the regular library staff should take care of the updation of the databases on a regular basis. Using contract services has of course the risk of poor quality input, but it could be overcome by enforcing strict quality control measures. But again, majority of the libraries do not have funds for creating the databases.

**Conclusion**

Development and management of library networks involves high commitment and tenacious work, particularly in the Indian environment where majority of the libraries do not have qualified and skilled manpower and also the financial resources to introduce automation and the current information technologies. Cooperation, not only
among libraries, but also among library networks is essential for the success of these networks in the country. While the problems and suggested solutions mentioned above are only indicative, the network managements have to make considerable efforts for detailed planning, implementation, and successful operation of networks. These efforts call for full-time work; part-time efforts may not only affect the quality, but also delay the implementation of the networks.
PART - II

Annotated Bibliography
LIBRARY AUTOMATION

1. ABDUL RASHID. Library automation: An overview. Library Science with a slant to Documentation and Information. 33, 1; 1996, March; 45-54.

The literature on library automation has become multifarious whilst in the past it was mainly concentrated a traditional housekeeping functions of acquisition, cataloguing and circulation, today it has expanded on the library management system to incorporate OPACS, CD-ROMs networks, desktop publishing, office automation etc. There is hypermedia, multimedia, virtual reality, etc. It is beyond the scope of this study to cover all the developments that have taken place; instead the review will focus only on core areas and significant trends in library automation.

2. RAVICHANDRA RAO (IK). Design and development of library automation: functions, file requirements and procedures. Library Science with a slant to Documentation. 23, 1; 1986, March; 1-35.

Applications of computers to library operations; i) Acquisitions control, ii) Serial control, iii) Circulation control etc. use of computers helps us in reducing the time wasted on non-productive works. It further helps us in having immediate access
to up-to-date information as well as to share the limited resources effectively. Steps involved in the development of design and programs. In India, considerable research work has been successfully undertaken to examine the feasibility of computer applications to library and information science.

3. SETH (MK) and DALAI (BK). Library automation in India. DESI DOC Bulletin of Information Technology. 15, 3; 1995, May; 29-34.

Library automation refers to the processing of routine clerical functions in the library using computers or other mechanical/semi-automic equipment, tools and techniques. Recently in India, more and more libraries are turning to information technology for automation. Mentions the various organisation in India who have made efforts in the area of library automation. The software are developed by Indian firms for the library operations and the problems faced while using these packages.


Libraries are increasingly turning to
information technology to automate a number of functions in the libraries. Libraries with on-line access facilities, a larger computer system and a local area networking environment are required. Users may access the database from a number of terminals/PCs. Simultaneous operations of catalogue updating, inputting, issue/return, record and bibliographic search can take place. Libraries and information centres have to employ more and more of modern information technology to cope with the rapidly multiplying literature and its demand all over the world.

-, ACADEMIC LIBRARIES


The advances in electronic technology influenced the traditionally operated academic libraries information storage and retrieval systems. The tendencies of the user communities changed considerably towards electronic sources. The benefits of library automation necessarily brought impending investments and demands strategic planning for resources mobilization. Rapid changes in technology have to interface the existing computer hardware and
software infrastructure. The fiscal policies bound to undergo changes as also the ways of operating systems of libraries.

---, effect of SDI SERVICE

6. KRISHNA (KM) and SINGH (YK). Computer based retrospective SDI service and its implication in academic libraries of India. Indian J1 of Information Library and Society. 6, 3-4; 1993, Jul-Dec; 268-71.

SDI is that service within an organisation which concerns itself with channeling of new item of information from various success to those points within the organisation where they can usefully serve some one's interest. Computerised SDI service would be more useful and economical. This paper discusses the need, method of preparation and importance of computer-based based retrospective SDI service. Highlights its implications in academic libraries.

---, ACQUISITION, DOCUMENTS

7. BHATTACHARYA SWATI and BALASUBRAMANIAN (V). Computer assisted document acquisition system. Library Science with a slant to Documentation. 23, 2; 1986, Jun; 73-84.

An operational online acquisition system and various activities involved in the automated environment. Software development characteristic, and
factors influencing the portability with respect to hardware/system software requirements. The system operates an hierarchical menu-driver commands. Its features include duplication checking for orders as well as for payments, generation of different types of claims at stipulated intervals, online enquiries from users and variety of reports/forms generation.

--- DATABASE DESIGN ---


A document acquisition control system database is designed to meet all functional requirements of acquisition process that are inherent within frequent exceptions and also to handle the complex nature of bibliographical data efficiently towards integrated library house keeping procedures. Several functions oriented physical database (PDBS) together with their logical relationships constitute the total database, PDBS employ multi-list organization using appropriate access method, viz. ISAM, DAM and ISAM/OSAM.
9. HARAVU (LJ), JADHAV (PS) and SREERAMANA (R). Microcomputer based book acquisition system using dBase II. Librari Science with a slant to Documentation. 23, 1; 1986, Jun; 85-102.

A number of related files have to be managed, aDBMS such as dBase II provides several features for structuring and creating the database, files for entering and updating the records, for efficient search, and for the generation of various output products or reports, book acquisition system using a microcomputer has been developed. The design criteria particularly functional aspects. It is extremely easy in dBase II to define the structure of a database file or relation.

10. CHHOTey LAL and BHATIA (S). Adoption of information technology by agricultural libraries in India. Annals of Library Science and Documentation. 40, 1; 1993, Mar; 6-11.

The agricultural libraries can not afford to lag behind in their procurement and use. The procurement of publication in electronic media will save a lot of storage space and give the facility of rapid access and search of voluminous data. Westernised style of
information service is not practicable in Indian conditions. ICAR being the apex body has developed a well grid two tier National Agricultural Research System (NARS) of Cooperative Agriculture consisting of research institutes, project directorates, agricultural universities and All India Coordinated Research Projects (AIC RPS) for agricultural research and adoption of improved technology keeping in view the prevailing agricultural conditions and vast illiteracy in the country.

11. BEGUM (KJ) and SAMI (LK). Research collaboration in agricultural science. International Library Review. 20, 1; 1988, Jan; 57-63.

The bibliographic items from Indian Science Abstract (INSDOC) for the year 1976-83 were scanned to gather the relevant data. The data for the year 1979 was not included as it was not available at the time of data collection. The objectives: to identify the authorship pattern and the collaborative research trend in the field of Agricultural Science; to make an assessment of research collaboration by comparison with the extrapolated data of a similar investigation made in the fields of Biochemistry and chemical engineering and computer based information retrieval and storage in Geo-science.
Barcode is not a new technology. Barcodes are self-contained messages with information encoded in a series of black bars of varying breaths and series of white spaces between every two of them. These codes have found varieties of applications in different fields, including library and information services. The features, advantages and use of barcode system in libraries with particular reference to its implementation in space applications centre (SAC) library have been discussed.

A database consisting a total of 336 items on the subject for a period 1946-69 was the results of two previous studies on musicology and science were compared. A total of 304 items were contributed as personal items by a total number 339 authors. About 69%
of all the authors were identified as collaborative workers, contributing a total of 119 pages as coauthored contributions. The geocomputer scientists are found to be moderately collaborative; not highly collaborative like scientists for established scientific disciplines.

- BULLETIN BOARDS


These are vital tools for computer mediated communication among computer users. There are similar to the bulletin boards that are displayed in a library. However, these are operated electronically on computer networks. Electronic BBSs, the infrastructure required to set up BBS, and their applications in general. An attempt has also been made to design an Indian Bulletin Board System for libraries, a conceptual BBS on which different types of information could be organized and a number of services could be provided to the users.
- CD ROM, CAPABILITIES


Some of the media used as external storage of information for computer system include punched cards, punched paper tapes, magnetic tape, magnetic disks and optical media. CD-ROM as electronic media for document storage and retrieval. Explains the structure storage capacity and processes involved in making of CD-ROM disc. Highlights the features of CD-ROM in terms of versatility, storage density, durability, usability and cost relating to searching and also indicates its limitations. States the CD-ROM products in the field of library and information science and the project on document delivery through CD-ROM.

- , DATABASE, MEDLINE, DELHI


Libraries/institutions in Delhi were acquiring MEDLINE database in CD-ROM discs and had started search services also: 1) Institute of Nuclear Medicine and Allied Sciences (INMAS), 2) National Medical Library.
(NML), 3) National Documentation Centre, National Institute of Health and Family Welfare (NIHWF), 4) Bioinformatics Centre, JNU, 5) NIC and 6) All India Institute of Medical Sciences (AIIMS) B.B. Dixit Library. The NIC and AIIMS have been able to install multi-user, multi-disc, CD-NET environment where users encouraged to conduct their own search.

-,-,-, SERVICE, SURVEY


Development in information technology have revolutionized the concept of converting large volumes of information into machine readable form as databases. Results of a study to find the number of institutions processing CD-ROM facilities, the availability of various CD-ROM database, procurement modes, expenditure, and usage by number of searches conducted in India.

-,-,-, DEVELOPING COUNTRIES

18. NARGIS HUSAIN. CD-ROM: An appropriate technology for developing countries. Herald of Library Science. 27, 1-2; 1988, Jan-Apr; 55-61.

Forecasts that by the year 2000, every scientist
will use a terminal in the office and one at have to retrieve and transmit information. CD-ROM technology will eventually store one third of all material stored at present on microfilm, library catalogues and traditional on-line databases. CD-ROM media has enormous potential in publishing and in producing large volume of databases at a low cost. The use of computer in India and the coverage of 12 Indian journals.

-,-, INFORMATION SYSTEM


The customer supplies the database to the manufacturer in video tape version for which CD-ROM format is required according to the manufacturer's premastering specifications. Several database producers and publishers have started producing their products both in online and CD-ROM formats. Each producer can have one single software for all databases produced by them and the same can be recorded on the respective CD-ROM disc or issue on a separate floppy.
CIRCULATION COBOL.

20. SHALINI (R) and HRINARAYANA (NS). Micro computer based circulation system for a university library: An experiment using COBOL. *Library Science with a slant to Documentation and Information Studies*. 26, 3; 1989, Sep; 217.

Circulation has been the most widely automated function in libraries, as it comprises of a set of easily identifiable routines and procedures on certain records. The programme written in COBOL language. It has been decided to use COBOL in view of its excellent, file handling capability and also some of its innovative features like efficient data description, data processing and production of required reports. The file organization used in this system is the indexed sequential organisation.

-,-, dBASE III+


Micro computer can effectively be used in circulation control, to ensure accuracy, currency, prevent unauthorised or excess borrowing and also to
process library statistics. dBase III+ permits to modify and improve the circulation control routine more effectively. The various files required, their structure and index files. The input processing output etc. for each of the functions of the circulation system which are taken into consideration.

-,-, INDIAN INSTITUTE OF SCIENCE.

22. GOWRI (R) and YADUMANI. Automation of library circulation. Library Science with a slant to Documentation. 23, 3; 1986, Sep; 127-51.

The software developed to automatic the Indian Institute of Science library's circulation system. Eight procedures incorporated in the system to achieve the objectives. Once a procedure is involved it expects a set of inputs, and these are accepted through the machines conversation are self-explanatory and it makes it easy and simple to use the system. The system has been developed to work on a single terminal extending equal facilities to the staff and the user. Suggestions are made to adopt the system to work on two terminals to improve the service to the user.
IIT Delhi is one amongst the thirty libraries currently engaged in applying automated data processing to library operations and information services. The master member, master circulation and inventory files required for automation of the system. The data structure of each file. Explains, the procedure for updating these files like addition/deletion of records, reservation of books in demand. How information, like books overdue from members, computation of overdue charges, generation of reminder, is generated these files.

Circulation is a primary task of a service. This means creating effective charging and discharging systems and procedures for all types of users for different types of library material. The main
objectives are accuracy, economy and ease of use. The PROLOG is known as the first practical logic programming language. Programs in PROLOG are treated as data in a database. One of the unique properties of PROLOG programs is their conciseness. The system presented here is an experiment in designing and developing a computer program for circulation control using PROLOG. The system is capable of achieving many of the essential qualities of an ideal automated circulation system.

use of BARCODE, IIT


Barcode is a series of black bars of varying breaths and white spaces between every two of them. The bars and spaces represent a series of characters or digits. Such type of barcodes are found in foreign countries printed on food packets, consumables, book etc. The barcodes and readable only by a scanner which send messages to the computer that decodifies the number of digits. Learning from the experience elsewhere was not possible as no information on the use of the technology in a library, particularly of the size of IIT Bombay was available.
- COLLECTION DEVELOPMENT **effect of ELECTRONIC PUBLISHING**


   Technology has altered the mode of publication in such a way that though the traditional sources of information continue to be produced, by and large information market has been flooded with the attractive electronic form of publication. Care must be taken that these alternatives to library are not glorified as able to perform information services are limited or bound by any traditions. Problems of collection development in traditional libraries and how it can be tackled in IT environment. Problems faced by the library and information centres in procuring electronic publications.


   The developments that emerged during the present century have provided many opportunities and challenges
for the libraries. Development of collection for libraries in the context of electronic publication and networking with special reference to formulation of policies, users, forms, storage, mode of access, selection, acquisition, bibliographical control, finance, evaluation and manpower. Develop a need based, relevant and cost effective collection, consisting of electronic and other publications in document form, requires systematic planning and effect implementation.


The function of a library is to develop a document collection to meet the requirements of its clientele. But in the context of recent developments in IT, a mere development of collection is meaningless because much of the information can be accessed through various networks and the user can be satisfied. Availability of journals in the electronic form both full text and bibliographic, particularly in the form of CD-ROMS. If such CD-ROM are available in the networks, many can access such CDs and select their relevant articles of interest.

Collection development is a planning and decision making process. Information technologies have advanced to such an extent that their impact on libraries is significant. Particularly, development regarding digital libraries, internet, electronic publications, CD-ROMs, etc. have forced the librarians to change the way they are now functioning. Effective techniques are required to search and store the downloaded data. The policy for collection development should take care of recent advances in information technology and its impact.


Collection development is one of the primary functions of any library and information centre. The collection of a library reflects the efficiency and effectiveness of its services. Often 'strength' of collection is used as descriptor in describing a
a library. The internet as a world wide source of information and as scope for electronic collection development. The role of internet as more than just a channel for communication. The different roles the net has to play in the information scenario, specially in connection with collection development.

-,-, ELECTRONIC PUBLISHING, UNIVERSITY LIBRARIES


Impact of collection development in university libraries on their space requirement and how CD-ROM technology can alleviate the problem with the use of compact discs on various subjects of interest to university libraries. Its effectiveness as an alternative to on-line searching of the international databases and the value for retrospective searches. Calls for introducing CD-ROM in university libraries.

-,, COMPUTER LITERARY, LIBRARIANS

32. JOSEPH AINA (O). Computer literacy: The librarians in the developing countries. Herald of Library Science. 33, 1-2; 1994, Jan-Apr; 8-10.

Computer literacy is now widely accepted as an
essential part of elementary education of an average citizen in most developed countries. Computer application is an Automated Information System and the computer operating systems have now been developed to such a stage that operation of a computer can be competently managed by personnel with secondary school education. The library profession requires knowledge of computer science and that the librarian should not be a computer illiterate. Computer literacy has become a must for the librarian to meet the challenges of information revolution.

- COMPUTER NETWORKING, USIS


USIS transmitted data between our offices in different cities in India. To keep transmission from interfering with one another each type (voice, radio, TV satellites etc) is allocated a band width in the continuous range of frequencies called the electromagnetic spectrum. Allocation is determined internationally by the international telecommunications union to avoid competition for the same band widths by different carriers and countries. Satellite time is allocated to different users. Thus, we can say
Doordarshan has a fixed slot on the satellite for national network transmission.

-, CURRENT AGRICULTURAL RESEARCH INFORMATION, MANAGEMENT

34. BOSE (PC). Management of current agricultural research information. SISCOM. 11, 1; 1991, Jan; 23.

The importance of ongoing research information systems in agriculture. Description of the system objectives, utility and usefulness to the research workers has been given. CARIS can generate published directories and also can create computerized database. Matrix for computerization and computer program using micro CDS/ISIS version 2.3 software has been touched upon.

-, DATABANKS, FARM, INFORMATION TECHNOLOGY, NATIONAL

35. BANKAPUR (MB). Need of national databank for the indigenous farm management information technology. IAILC Bulletin. 31, 4; 1986, Dec; 177-82.

A concerted global effort that has been led by a group of several hundred scientists working through a network of research facilities forming a unique and fragile web that binds together both developed and under developing countries in the pursuit of a common
goal through the different international bodies. The logical evolution of the shift in emphasis from the subject agriculture itself from basic to applied, likewise from non-indigenous to indigenous aspects of information technology.

-, DATABASE, CD-ROM, POPLINE use in NIHFW


CD-ROM technology has become a viable medium for the distribution of data. Bibliographic databases, as also directory type data and encyclopaedias are now available in CD-ROM, POPLINE (Population Information Online) is a global population and family planning, database. Some aspects of use of the CD-ROM POPLINE database maintained by John Hopkins University in the light of the experience and exposure gained of the National Documentation Centre of the NIHFW National Institute of Health and Family Welfare, New Delhi, India. This database no doubt, is a tool to provide immediate and urgent specific answers to queries from the functionaries, agencies and research scholars in the field of population studies and related aspects.
A dramatic change in man's outlook on life that has taken place in recent years is his growing awareness of the risks he encounters in daily experiences: tradition hazards, medicinal side effects, exposure to toxic chemicals, food contaminants and occupational, diseases. For avoiding of chemical accidents and to formulate regulatory, guidelines, there is a constant need of ready availability of chemical safety data towards this purpose ITRC has created a computerized databank to serve as an efficient source of storage and retrieval. Complete toxicology data profiles on 228 chemicals manufactured or used in India were compiled by ITRC, using dBase III plus and Word star softwares.
Problems of standardization of formats for design, creation, maintenance and searching of computerized database is most crucial and its calls for standardization in today's information flooded world. The need of standardization is felt strongly so that the precious information data can be exchanged and used easily among the users. Certain areas in which standardization is needed are hardware, software, networking, searching and vocabulary control etc. A number of national and international standardizing bodies like IAS, ISO, ANSI, FIPS, BSI and BIS, etc. are involved in providing the guidelines/standards for a common practice for creation and use of computerized databases.

Since the high initial expenses and cost of maintenance of already available data bases and
sophisticated software is not accepted by most of the libraries in India, an in-house database can be created using the computer facilities already available, and without expensive equipment, software or outside consultants. For creating an in-house database, local record format can be developed or MARC tapes produced and distributed by library of Congress. MARC tape were used as a basis in an attempt to create in in-house database for the documents related to computer science.

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A brief description of Current Research in Plant Science (CRIPS) database catering to the current information needs of the plant scientists. The various steps involved in designing and developing the database using mini-micro CDS/ISIS version 2.3 have been discussed. The observations with regard to maintenance of the database, information retrieval and printing of the whole or a part of the database are discussed in detail. Sorting and printing of the list of journals
scanned for a particular issue from the database have also been dealt with. However, the package have certain limitations.

-,-, GRIP

41. MURTY (DSR) and CHANDER SHEKHAR. General purpose retrieval of information package (GRIP) for bibliographic databases. *Library Science with a slant to documentation*. 23, 4; 1986, Dec; 202-13.

This system specially suitable for the retrieval of bibliographic information from a small scale database containing upto 15000 records. The user defines fields in terms of tags through the data definition processor which provides flexibility for the record structure. Retrieval of information is carried out by the query processor in an interactive manner. It provides options to (i) select a descriptor, (ii) combine 2 sets at a time; (iii) display the different sets chosen; and (iv) print the chosen set(s) with full record details or specified tag fields only.

-,-, INDIAN SCIENCE CITATION, BIBLIOMETRIC TOOL

42. NARENDRA KUMAR and SEN (BK). Indian science citation database: A bibliographic tool. *SISCOM*. 12, 1-2; 1992, Jan-Feb; 14.

Two packages were developed for the Indian
Science citation database at NCB, INSDOC, are under DOS operation system and the other in the UNIX environment. The database is designed in such a fashion that it acts as a powerful tool to search out the literature through i) Author, ii) Department, iii) Institute, iv) City, v) Country, vi) Title, vii) Journal, viii) Journal year, ix) Journal volume, x) First page of paper.

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43. GUPTA (RC) and GUPTA (SP). Computerised management of Institutional membership. *Indian Journal of Information Library and Society*. 9, 3-4; 1996, Jul-Dec; 213-7.

The Central Building Research Institute (CBRI), are of the leading research and developmental establishments in India in the field of building science and construction techniques, contributes significantly in the preparation process of Indian standard specification and/or codes of practice related to buildings. Computer application had made this an easy, time saving and dependable affair. A set of need based programme has been developed in dBase III plus in a menu driver fashion which can be used even by a beginner.
44. SHAILENDRA KUMAR, LAKSHMI (VV) and KUNDU (SR). Creation of the directory of participating institutions for NUCSSI using mini-micro CDS/ISIS. Annals of Library Science and Documentation. 35, 4; 1988, Dec; 178-88.

Software package mini-micro CDS/ISIS has been used in the creation of database for the directory of participating institutions for national, union catalogue of scientific serials in India (NUCSSI). Step by step the file development and sorting of records in the database. Different sort keys are given in the worksheet along with the formatting required for the various print outputs. Specify the recency of the data received from various institutions leading to the updating of the NUCSSI database.

45. KAZI KABIR HOSSAIN. Online databases for mathematical literature. IASLIC Bulletin. 31, 2; 1986, Jun; 51-4.

Online search is the most progressive tool for catering information according to any specific inquiry from large data basis. Two databases - ERIC (Educational Resource Information Centre) and MATHD: (Mathematics Didakik) cover the subject on Mathematical Education. Importance of online in the field of scientific literacy explosion. Show the application of
online in the field of mathematical literature search. The most representative databases searchable online which cover mathematical subject in terms of their online versions.

-, -, RURAL DEVELOPMENT, CORD use of LIBSYS

46. TAKALKAR (Anil) and MURTHY (Lakshmi). Rural development information: A case study of computerization of CORD database. *SISCOM*. 13, 1-2; 1993, Jan-Feb; 18.

Centre on Rural Documentation (CORD) is the process of computerization of its rural development database and other housekeeping activities. LIBSYS, an integrated information management software is used for his purpose. Computer facilities available at the centre include a HCL-HP Meteor III EISA 486 Super mini with eight terminals for various library operations like Acquisition, Technical processing serial control, polulation, circulation and user terminals. Online search is possible through author, title, subject, key words, class number and Boolean operators.

-, -, SATCRIS, ICRISAT

47. SINHA (PK) and RATNA KUMAR (P). Microcomputer based batch mode date input system for SATCRIS database. *SISCOM*. 11, 1; 1991, Jan; 18.

SATCRIS, the Semi-Arid Tropical Crops
Information Service, is a specialised information project of the international crop research institute for the semi-arid tropics (ICRISAT). The database is build from subsets of two international agricultural database and local input consisting of references and abstracts of documents acquired in the ICRISAT library. The limitations of data entry/edit module of basis software which makes data input operation cumbersome and the features of an inhouse micro computer based data input system developed to overcome these limitations.

-,-, use of CDS/ISIS

48. DESHMUKH (Subhash) and BHATTACHARYA (Jaydeb). Comparative study of bibliographical database with mini micro CDS/ISIS version 1.0 and version 2.3. Library Herald. 28, 1-2; 1989, Apr-Sep; 1-9.

Mini micro CDS/ISIS version 1.0 was released in India in August 1986. since then this software package has became quite popular in small/medium size special libraries for the development of bibliographical databases. With the release of mini-micro version 2.3 in July 1989, most of the libraries who have developed and are maintaining the databases with version 1.0 are in the process of mini-micro version 2.3 over mini-micro version 1.0 in real working environment.

National Council for Cement and Building Materials (NCB) is the premier body and the largest industrial support organisation of its kind in the country with several units and divisions covering research, technological development, technology transfer, education and industrial information services in the field of cement and building materials. Keeping in view the problems posed by the information explosion NCB-CIS acquired a dedicated computer system and the mini-micro CDS/ISIS software package from UNESCO under licence, through NISSAT, DSIR, New Delhi.

50. SRINIVASAN (R). Data network for India. *Library Science with a slant to Documentation*. 24, 3; 1987, Sep; 150-72.

The development of telecommunication network, contribute of these developments to socio and economic development and the value of satellite technology in the spread of telecommunication facility. The computer
communication network development in India. The application of data network in integrating varieties of resources and activities such as water, electricity, oil, transport, health and network. Configuration of data transfer network, the nodes in transfer network and other modular aspects.

- , DEFENCE INFORMATION SYSTEM and SERVICES

51. MEHTA (SN) and SAXENA (SC). Defence information system and services. SISCOM. 11, 1; 1991, Jan; 20.

A pragmatic view of the Defence Information System in India. Various information systems and services meeting the needs of scientific information of the different Departments of Ministry of Defence have been discussed in brief. Various on going activities and future plans like development of information network, modernisation of systems and services, application of modern information network, information technologies etc. to provide efficient information service have been included.

- , DISIDOC

52. DESIDOC in pursuit of excellence. DESIDOC Bulletin of Information Technology. 17, 3; 1997, May; 9-20.

DESIDOC started functioning in 1958 and it was
then known as Scientific Information Bureau. It was one of the divisions of the Defence Service Laboratory (DSL), a major laboratory of DRD. The DSL maintains a database of its holdings of books and reports in computerised form using an inhouse software called SUCHIKA. Data for this database is collected in the Common Communication Format (CCF) promoted by Unesco this database is available as online public access catalogue (OPAC) which can be assessed from the terminals kept in the library and also through telephone lines in dial-up mode.

- DESKTOP PUBLISHING

53. SHARMA (UR) and ANURADHA RAVI. Desktop publishing. DESIDOC Bulletin of Information Technology, 7, 3; 1987; 3-7.

The DTP system is basically a computer system consisting of a terminal with a visual display unit (screen), a keyboard, a mouse or light pen as input devices; a high quality printer as output device; a data storage device like floppies or discs, and other communication links. It has several features like, typography of letters, print quality, speed, storage capacity, case in handling, page composition and layout, and editing. Instead of having to use a keyboard to enter information the user need only speak
his thoughts and the crisp printed copies would come out.

-, DEVELOPING COUNTRIES, SCIENTIFIC LITERATURE, ACCESS


Unesco activities to promote library and information services, notably within the framework of UNISIST and the general information programme, have always included a strong effort to improve the access of sciences and engineers to information and documentation. Efforts: advice on national information policies and the development of national library and information systems; developments and promotion of standards and methods for the transfer of information, such as CDS/ISIS and the common communication format. All these efforts have a convergent aim improving access to scientific literature.

-, DEVELOPMENT STAGES


Information handling technologies have been
existing for the last fourty years. These years have seen rapid development in these technologies and the use they have been put to. A number of hypotheses has been developed by various authors, to understand the trend of development of information technology. All the authors have described three stages in the development of IT and feel that we are presently entering in the third stage microcomputers are getting linked to one another. So that they can be used independently or in conjunction with databases. These emerging systems can also be linked to external database and communications networks.

- DISSEMINATION OF INFORMATION impact of IT


Information can not only be stored retrieved, communicated and broad casted electronically in enormous quantities and at phenomenal speeds, but it can also be rearranged, selected, marshalled and transformed. Microprocessor combined with dramatically enhanced capability has added new dimensions to the computer hardware technology. Optical sotrage disk
(CD-ROM), computer output microfilm/computer input microfilm systems are comparatively new area of development. Single function application packages, integrated function application packages, export systems, online database etc. has taken a quantum leap.

-, DOCUMENT DELIVERY


The origin of document delivery, as the term came to be known, is from an inter library loan and photocopying service for journal articles, offered by libraries largely free of cost. INSDOC is providing such a service except for the technology element of bibliographic access and online ordering missing. Electronic journals started their entry into online market due to declining storage costs and increasing computing power. More full text/full document databases are available on CD-ROM than on online. Technology trends are very encouraging for the document delivery process to go completely electronic.

Indian National Scientific Documentation Centre (INSDOC) supplies documents to the research workers on request. Through a direct link, the fax cards, modems via telephone used for transferring some of the documents. Some of the customers started placing the documents supply orders through electronic mail with the expectation of getting it within a short time. Therefore INSDOC started introducing information technology for automating its services and exploring the possibility of transferring the documents through a network to the customers.

59. GOPINATH (MA). Computer and communication technology: Implementations for development of curricula for library and information work. *Library Science with a slant to Documentation*. 24, 3; 1987, Sep; 133-44.

Two aspects of library and information science education which are important in relation to computer communication technology; 1) Training in adoption of automation for library operations, 2) Training in adoption of on-line system for information retrieval. A
curriculum for information technology is 3 paper module, namely, information system, library automation and information retrieval. This forms a module for masters degree course.

- , - , INFORMATION SCIENCE, LIBRARY SCHOOLS, ASIA


The 1982 survey found a big increase in information science courses, with information storage and retrieval and programming courses showing the greatest increase, showing that the library schools had effectively addressed the deficiency in programming skills. Microcomputers were also integrated into many library school curricula. Fifteen courses under eleven different titles were offered in the library automation. The use of modern technology, particularly computers, to facilitate traditional library operations.

- , - , PROBLEMS

61. SEWA SINGH. Advanced level institute on computer application in libraries. Herald of Library Science. 27, 1-2; 1988, Jan; 89-94.

In many of the library and information science
departments in India, the 4 computer application in libraries is introduced as one of the papers at the MLISc level. It has been taught without the essential practical emphasis on the hardware and software mainly because the teachers who teach this subject lack the exposure to computers. There has been a long felt demand for a course which could provide opportunities to the teachers to work on computers and teach more effectively.

-,-,use of IT


IT as a technology used in the operation and management of activities of libraries and information centres. It can be grouped into the broad disciplines of computers and communications covering the development and management of information systems like libraries, databases and networks both online and offline; and reprography and mass communication covering the technologies used for presentation and dissemination of information. Impact and use of all these technologies on library and information science education.
IT networking and expanding information marketplace represent a combination of factors effecting librarians and opinion of administrative decision makers about libraries. Technological advances affect the fundamental library operations, and can possibly even change the basic social role of libraries. The future of libraries is a mosaic that will make libraries more complex. In addition to book stacks and reading tables, there will be carrels and computer terminals. Besides this, there may be remote computer terminals with databases which have been locally developed viz., online public access catalogue (OPAC) of resources in the library.

The emergence of new information technologies has great impact on the future of libraries in the electronic age. Various factors involved in
transformation of traditional libraries into electronic awe, the advantages of electronic library and also librarians role therein the pilot project at INSDOC for developing and electronic library is also mentioned.

-, ENVIS


Since environment is a broad ranging multi disciplinary subject, a comprehensive information system an environment would necessarily involve effective participation of concerned institutions/organisations in the countries that are actively engaged in work relating to different subject areas of environment. ENVIS has, therefore, to develop itself with a network of such participating institutions/organisations for the programme to be meaningful. ENVIS centres in the different subject areas of environment constitute the nodes in this network development.

-, EXPERT SYSTEMS


Expert System (ES) acquire their knowledge from
a human expert and "This knowledge is not in the form of reliable algorithms but are adhoc rules, hunches or beliefs. Covers (i) the literature published in 1985, 1986 and 1987. It is not comprehensive, two papers are published in 1983 and 1984. (ii) It covers only library and information science abstracts. (iii) It does not include description of commercial software package.

-, EXPERT SYSTEMS


the expert system aims to assist or advise the non-expert users. Systems are usually grouped in literature by the sub domain (e.g. online, intermediary, reference work, cataloguing, indexing, classification etc) that they address. Components, the knowledge base, the inference engine, user interface and the knowledge acquisition module are explained. Expert systems may find increasing application in special libraries (such as DESIDOC) which may collect and codify knowledge within their areas of specialisation).

Attempts to develop heuristics which help in building an expert system for the automatic identification of bibliographic data elements from the title pages of documents. The study emphasizes mainly on the physical lay out of the title pages and attempts to identify the pattern of appearance of various bibliographic data elements like title, author, publisher etc.


In the initial applications of computers to business data processing problems file organisation was confined mainly to converting sequential unit record files from 80-90 column punched cards to magnetic storage media. But, afterwords, factors like increased volume of data operations, costs of the storage media critically of response time to answer a query influenced the computer specialists to develop a
variety of file organisations to suit the above requirements. A study of various aspects of file organisation, its importance in information systems and different processes involved in file organisation.

-, FIIT-NISSAT CD-ROM


Foundation for innovation and information technology (FIIT) has been awarded a project on "National Information System for Science and Technology (NISSAT), Deptt. of Scientific and Industrial Research, New Delhi. This centre has been set up at IIT Delhi for promoting usage of CD-ROM database for basic and applied research. It is acting as dipository for all CD-ROMs produced in India and provides single window information services to clients users.

-, FUTURE


Modern library system highlights computer networking which enables the interlinking of libraries and information centres, thus paving the way for resource-sharing. By sharing we mean cooperative
utilisation of all resources, and this should be the watch word for library systems of the future. The ways and extent of the application of modern information technologies to the library operations and recommendations to improve the situation in India, particularly in the context of information age of 21st century. Information technology can be applied to the library and information work, for speedy, accurate and exhaustive information processing.


Library automation is the current theme amongst scholars as the computers are becoming more and more acceptable tools. The government policies to enforce resource sharing via networks/satellite links necessitate computerized database as a base work. Management of the libraries now requires socio-technological approach and redesigning of library job elements to cope with the changes of the present and future era. An attempt is made to investigate the socio-technical approach coupled with the emerging technologies to position a role of librarians as a new relationship between information and user.
The use of microcomputer by libraries for housekeeping operations and information retrieval is now possible and economical. The hardware is now manufactured in India and available at affordable prices. But the application software packages are not readily available. Before automation is introduced, a proper evaluation of library's requirements, the software features needed and the hardware capabilities for implementing the software has to be made. A suitable set of guidelines and criteria will be helpful for choosing a system.

Preliminary steps to be taken and the mechanics involved at different stages in initiating software, database, data dictionary and preparing data transmitted sheet for the purpose of developing program language and programming for any one of the house
keeping operations. The various steps involved are described with reference to automating the periodical section of the library. These are essential for a management information system software package for periodicals.


CDS/ISIS is a menu driven powerful software program package for textual management. Library and information systems can utilise this package for cataloguing and indexing services. It requires to go systematically performing steps by step activity based operations. The package generates alphabetical index using five techniques and arranges the generated indexes in alphabetical order with a tremendous speed. The program package is distributed free by NISSAT, New Delhi to libraries of non profit making organisations provided they have computing facilities.
The use of sophisticated hardware and software systems permit easy retrieval of relevant information. Computer communication network provide remote access to information. It appears that information management must necessarily depend heavily on the use of information technology. Libraries are coming closer to one another, promoting networks, making available private databases to one another, formulating strategies of interlending and document supply have become inevitable because of increasing costs.

The application of system analysis has been increasing in the field of computerised information processing. System analysis can solve the diverse problems faced by the libraries. How the operation research differs from system analysis and the role
played by a designer in the application of design technique. A designer is to produce a flow chart that needs to run the library. Indicates the process of programme making and how input/output provided to the designer as documentation.

--. PRODUCTS role of LIBRARIANS


The ramifications of information technology has generated a variety of information products. These products have mobility to move straight to the targeted audience. Technologically the movement of information from person to person may not need intermediaries. But, there is need due to psychological, educational, economic and social needs. Technology in essence, has brought in a wide scope for facile capture, presentation and dissemination of information.

--. RETRIEVAL, USER EDUCATION

79. USHA RANI (V) and SEWA SINGH. User education for computerized information retrieval. *Journal of Library and Information Science*. 19, 1; 1994, Jun; 59-68.

Computers are being used in the libraries for
both housekeeping activities and information storage, retrieval and reproduction functions. If the user desires, it is possible to have a print-out of the responses. CD-ROM is an excellent storage medium and can be used together with widely available low-cost micro-or personal computers to provide relatively powerful distributed storage and processing devices, which are not dependent on telecommunication system. User education is a powerful unifying force linking together the vast resources of information and the user of the information. The need of user education is being increasingly realised in India and practiced only since the last decade or so more actively. A few seminars and workshops were promoted by INSDOC and DRTC.

-,-, SOCIETY, MANPOWER

80. BHATTACHARAYA (G). Information society and the place of conventional technique for information work and service. Library Science with a slant to Documentation Information Studies. 26, 2; 1989, June; 108-13.

To meet the information needs of the emerging information society, the developed countries are witnessing today a large scale use of advances in certain technologies i.e. 1) Computer Technology, 2) Telecommunication, 3) Storage, 4) Printing, 5) Reprographic technology. The computer is a machine that
can do mainly things, but time has come to review the position of the intellectual means. Inadequacy of these means, one difficulty in this respect is the lack of suitable manpower for this purpose specially in developing countries.

-,-, SYSTEM

81. APPA RAO (Allan) and SUGUNAMMA (Gogula). Computerised information system for libraries. *Library Science with a slant to Documentation*. 24, 2; 1987, Jun; 122-30.

It is the application of the scientific method to library problems. Its use of "cost effectiveness" as the ultimate criterian for evaluation of library operation, its view of the library in the context of the larger situation within which it occurs and its attitude of question towards the very definition of the library problem. The role of vocabulary control devices, profile design and query data base structural matching are presented as a basic input for selective information service development.

-,-,-, and SERVICES, PROSPECTS


Computers widely have made possible the rapid
development of library automation and its improvements in data processing which laid the ground work for the design and development of bibliographic data bases and an line search and retrieval of information system networks at national and international levels. The application of computers in library and information system and services has been found highly significant in the processing and dissemination of information with their enormous storage capacity coupled with speed in retrieval of it.

-,-,-, BIBLIOGRAPHIC


The major function of an information system is to act as an interface between the user population and the universe of information resources. Most of information centre use information resources in the form of documents. Stresses the importance of a bibliographic information system. The factors that justify computerisation of information system in a library. The basic factors about computer and computerisation. Case studies of computerised technical enquiry service, SDI and document circulation.

The impetus to computerize the library services came in particular, due to the availability of CSD/ISIS package through aegis of UNESCO and NISSAT. The four phases consisting of planning and analysis, data design, creation of databases and maintenance on functional phase. Provides, general observations based on author's experience, indicating pitfalls to be avoided in the process. Suggestions regarding security control to ensure data is properly safeguard.


Part of special section of papers from the first European Conference an information systems, Henley Management College, UK on 29th March, 1993. A case study of the application of computers for development planning in India. Identifies seven major barriers
which have hampered the process of organisational change though computerization. Issues to the management of change through computerization and leads to same guidelines for more effective deployment of technology for developing planning.

..., RESEARCH SCHEMES, MANAGEMENT, CSIR

86. MALLICK (S). Computerizing information system for managing research schemes funded by CSIR. SISCOM. 11, 11; 1991, Jan; 18-9.

Planning for the computerisation programme of CSIR's extramural research schemes. The objectives are 1) to develop an MIS type package for efficient planning and management of the schemes, and 2) to develop data base for statistical and trend analysis and other type of report writing and overall impact/performance analysis. The package is being developed in dbase in PC class of machine and this will be converted to UNIX OS in near future in PC 386 for multiuser environment. Information sharing at various levels in EMR is expected to lead to more timely follow-up action fund release and its management.
87. KULDIP CHAND. Impact of information technology on the science information scene in India. *SISCOM*. 12, 1-2; 1992, Jan-Feb; 14.

The application of information technology in library and information activities such as creation and searching of databases and networking. Activities of NISSAT. The various institutions which are using new information technology such as online and CD-ROM effect of DTP on book production. The role of education and training for students, information handleless and users in the wake of new information technology. The effect on the cost of services.

88. BANKAPUR (MB). Need of national computer data bank for the indigenous farm-management information technology with a slant to information technology in agricultural sciences. *Library Science with a slant to Documentation*. 24, 4; 1987, Dec; 196-210.

The knowledge has not been best served with the methodology of systems research; conception, construction, validation and exploitation of computer based simulation models in direct relevance to agricultural sciences, technology and management. The
need to start exclusively "Indian Agricultural Abstracts" to keep alive and conventional methods of dissemination and utilization of information on the coverages of agricultural literature in Indian Science Abstracts is not up to the mark.

-,-,-, TRENDS


Information technology is the technique by which the tools are used for the interpretation, presentation and controlled use of data, and use as generic term for a cluster of technologies. The trends in technology that lead from the centralized to the distributed system have several important impacts. First, the acceptance of standards and the later reduction of cost through VLSIC (Very Large Scale Integration, technology.

-,-, INSPECT DATABASE, INFORMATION RETRIEVAL, SDI


The development of software for reviewing information from INSPEC magnetic tapes produced by
Institution of Electrical Engineers. London, UK. The software developed has different modules. They are keyword, extraction, indexed sequential, file creation, searching, formatting and printing. The keyword on which search has been made is subject heading. It takes around two to three days to process are INSPEC tape for two hundred user profiles.

-, INTEGRATED SYSTEM DESIGN

91. NEELAMEGHAN (A). Integrated system design for library and information systems. Library Science with a slant to Documentation. 23, 3; 1986, Sep; 176-93.

Information is an essential input in coordination of all human activities. The application of modern information technology (computer technology, telecommunication technology, audiovisual technology and graphics technology) is rapidly changing the situation and general perspective of information systems. Coordination information system saves time and efforts of individuals and groups. A system design for integrated information system based on a detailed matrix of data elements is presented.
The dramatic increase in the use of global network is examined through statistics and examples of the involvement of many countries. Despite the explosive growth of internet use and contrary to the increasingly frequent characterization of the internet as global, gaps are identified in the international coverage of the network. Evidence of the participation of librarians in the global network is sought through an analysis of subscriber lists for selected library related list serves. The value of the internet and the potential role librarians can plan in this evolving environment.

Internet is a network of networks spread worldwide. Each country has at least one backbone network that operates at a very high speed and carries bulk of the traffic. Other networks connect to that backbone. The hardware and software requirements, agencies
providing internet connection in India, their charges and the commands for connecting to internet. The command terms used with internet are explained for a beginner and even same Indian service providers on internet.


Information on the internet is stored in a haphazard, relatively unstructured manner thus making the access to information tedious, and a hit or miss proposition. It is important that librarians understand and exploit this information resource which is literally swamping the world with electronic data and information. Most users access the internet through an internet service provider (ISP) who has a machine on the internet. In India only Videsh Sanchar Nigam Limited (VSNL) is available to the general public.


Information technology is transforming the
nature of information availability and its management, thereby altering the traditional responsibilities of librarians. Mentioning important biomedical sources, available on internet, along with the journals and their have page sites and also some of the issues involved for it is connectivity e.g. financial, technical and organisational, offers biomedical reference scenario that illustrates how to search a database and find a document/information on biomedical subjects on the networks.


An extract from the course material called: 101 sites to see on the web: a handout. Items not of interest to Indian Librarians have been deleted. A few Indian sites have been added to show that India is fast catching up with the west. A site devoted to resources which provide information about child safety, censorship, privacy and personal freedom on the internet. Provides a wealth of information present in internet in various sites. Selected twenty seven topics of interest to a librarian. It includes several Indian sites.
The internet connects thousands of computers and computer networks worldwide. It provides a relatively easy way to communicate and exchange information. A number of software tools have been developed to help users to navigate the internet and its vast store of information. The internet gives direct access to specialists in hundreds of disciplines, who are quite willing to help with both the most mundane and the most difficult problem faced by librarians and their patrons. Provides information on the various segments of internet and also on how to go about various protocols needed for acquiring information from this vast networks of networks.

Modern information technology plays a vital role in information handling due to developments such as
reduction in computing time, capabilities of resource sharing, economic storage capabilities of files on video discus, use of TV as readymade information screen, telecommunication and satellite communication facilities. For the development of a country like India, using new technologies that provide better access to information.

LIBRARY INFORMATION, LIBRARIES and INFORMATION RETRIEVAL SYSTEM effect of OPTICAL STORAGE DEVICES


optical storage devices represent some of the most viable innovations for the improvement of the cost-performance relationships in computer and information management fields. One of the most important optical storage technologies viz. CD-ROM is based on this new form of consumer phonograph and it offers tremendous application potential specially in the field of information storage and retrieval systems. Silver Platter has released the library and information. Science obstacles (LISA) on CD-ROM. The disc includes the database from 1969 to 1986 and the
database and the software would be updated annually. this is even operational for retrieval with informatics India - a Bangalore based private firm.

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A large amount of information is being generated every moment. Mentions recent technological advances in electronics and its impact on modern society. Points out the need for application of modern technology in library and information work and services. Information and communication technology and their use. Emphasises the application of CD-ROM technology in developing bibliographic databases. States also the creation and growth of library networks at national and international levels for speedy retrieval of information. In India many networks have got started, e.g. NICNET, INDO NET, INFLIBNET, CALIBNET, DELINET, MALIBNET etc.
110

- MANAGEMENT DECISIONS, OPAC

101. SINGH (AN). Management decisions: Beyond the OPAC. Journal of Academic Librarianship. 21, 1; 1995, Jan; 43-5.

Library automation focused as it has been on the OPAC, is really only a component in an information strategy. That strategy is necessarily about keeping options open and recognizing the fact that the information technology curve is short and continuously changing. It is time for librarians to expand their view of the credentials which define the "professional" cadre in academic libraries.

-, MANPOWER DEVELOPMENT in relation to TRAINING

102. RAVICHANDRA RAO (IK). Training programme to develop manpower in the area of applications of microcomputers to libraries and information field. IASLIC Bulletin. 31, 4; 1986, Dec; 143-9.

A rapid development of information technology represented chiefly by the computer and the telecommunication system has accounted for the advent of information society. Information technology provides opportunities for libraries and information centres to widen, the scope of their activities and increase their significance within the organisation. They serve IT needed in libraries especially because of information
explosion, the availability of the information in machine readable form, the capability for "multi-use" of machine readable records.

------ role of INSDOC, TRAINING

103. ANAND (CM) and SEN (BK). Manpower development for computer applications to library and information activities: Role of INSDOC. IASLIC Bulletin. 36, 4; 1991, Dec; 157-69.

INSDOC has been offering a two year training courses on various topics particularly in the areas of information technology and computer applications to library and information activities for working professionals to provide an insight into the latest developments and equip them to adopt modern technology in their work environment. Aims to review INSDOC's contribution in the human resource development for computer applications to library and information activities.

------ NIC, TRAINING

104. SURINDER KUMAR, RAY (Dibakar) and CHINNAPPA (SL). Manpower development activities at National Informatics Centre (NIC). IASLIC Bulletin. 36, 4; 1991, Dec; 171-4.

NIC and Indian Council of Medical Research
(ICMR) jointly set up a biomedical information centre at NIC in 1986. NIC initiated and executed several training programmes aimed at improving skills and acquiring knowledge of library and information professionals in the areas: i) use of computer hardware and software; ii) introduction of automated systems for library management, etc. The centre has organised advanced level course in CD-ROM technologies, preparation of data on CD-ROM, authority, mastering etc.

105. ARORA (AM), KOCHHAR (VB) and ELHANCE (D). Bibliographic database of materials research in India: Design and development using dBase IV. SISCOM. 12, 1-2; 1992, Jan-Feb; 15.

The essential prerequisites for creating a bibliographic database on material research in India. The dBase-IV package has been found useful in the creation of this database in as much as it provides a broad, as well as statistical analysis of the data. The breakup of the personnel who performed for creating dBase is also given. It is noted that a structure of bibliographic dBase should be planned very carefully, taking into account, all present requirements and
future developments, keeping up the required standards whenever necessary.

- MODERN TECHNOLOGIES, USE


A survey of the usage of modern technologies (e.g. photocopiers, microfilming, computers, facsimile transmission, audio-visual, online searching and CD-ROMs) in Indian libraries. These libraries include university, engineering, scientific, medical, government and public libraries. Examines the impact of modern technologies on these libraries. With a summary of the problems faced by the librarians in adopting the modern technologies and suggests measures for implementation of modern technologies.

- MULTIMEDIA and HYPERMEDIA, BIOMEDICAL INFORMATION


A multimedia is a unique development, both for library staff and the users. Basic concept of
multimedia. The development and component of MM are described. The uses, importance, advantages and disadvantages in information storage and retrieval with particular reference to biomedical information services are discussed. The hardware and software requirement for multimedia work station have been suggested. The existing MM product companies and the use of MM and its product in the field of biomedicine viz., cardiology, diabetis, hyperoncology, pediatric neuro surgery etc. are highlighted. Problems in its implementation have also given in this.

-, NASSDOC PERIODICALS, UNION LIST

108. AGARWAL (SP). National Social Science Documentation Centre (India). International Library Review. 19, 3; 1987, Jul; 301-9.

NASSDOC was set up in 1970 by the ICSSR. Four volumes of the union lists to periodicals currently available in Andhra Pradesh, Bombay, Delhi and Karnataka. Libraries were brought out in 1971-72. The Delhi list has been updated in 1978, 1982 and 1985. The latest one records the availability of 2209 periodical titles in 30 libraries in Delhi during 1985. The list now be continuously computed using microcomputers, and kept updated on floppy discs.
The world has actually entered the information age. This has become possible as modern technology is growing at a very fast rate. As a result scientific communication in heading towards a phenomenal change—a change due to introduction of an automatic personalized communication system through extremely versatile fifth generation computers. Messages can be electronically stored and key as and when necessary at same online remote or local terminals and transmitted to many other interested researchers through sophisticated telecommunication links.

Library are new recognised as an important component in research and development establishment and socio-economic development for diffusion of knowledge and information. Today every job performed in the library needs automation for prompt result or action. The use of computers in library activities in Indian
context began at least two decades back. The computer can be used for information retrieval and dissemination of information, concerning books and periodicals in our modern library. Database developing using computers and the sharing of data and information through networking are gradually gaining importance in India.

111. DEVENDRAJAN (G). Information revolution or technology revolution. Library Progress. 8, 1-2; 1988, Jan-Dec; 8-10.

India is a country which is very late in realising the value of information. Attempts to store and disseminate information in a coordinated manner are in the rudimentary stage. India started NICNET and INFLIBNET. These are major national effort to improve capability in information transfer and access that provide support to scholarship learning research and academic pursuit.


Library networking was one of the tools by which resource sharing could be done. National Information Centre NIC efforts in promoting communication networking in the country. By putting 1.5 MBPS external gateways to reach US and UK through INTERNET and were
negotiating for a low cost facility which may have 45 MBPS capacity through these, all the institutions, colleges, universities, schools, libraries etc. NIC had also taken up India Image Programme under which all leading news papers would put in their information on the web page, that could be received by all the libraries through INTERNET. Delhi libraries could have the web page through DELNET.

--, ADINET


ADINET is the fifth library network sponsored by NISSAT in the country and aims to bring about cooperative mode of working amongst more than 150 libraries and information centres in and around Ahmedabad. E-mail facility being provided by ADINET will enable the members to exchange information with others within the city and outside. ADINET, although a very recent started network, has taken a quite a few initiatives to play a very useful role in library resource sharing and in information dissemination.
NBTB established the biotechnology information system at the national level in different areas of biotechnology integrating the specialised S and T information network for scientists and biotechnologists to have, ready access to computer based information on resources, databases in specialised subject areas and to build up expertise in biomatics. BTIS is established to serve as a networking and database management organisation in 7 identified areas involving 10 specialised centres in biotechnology. Under the BTIS program, the computerised services will be available for retrieval of information related to bibliographic information - research articles, reports, books, patents covered by biotechnology abstracts.

BISWAS (Arindam). Emerging revolution in library automation and networking systems in the Indian environment case: CALIBNET Project of CMC Ltd. SISCOM. 11, 1; 1991, Jan; 20.

Computerized library facilities are being used internationally in an extensive manner and the scope and nature of the services that can be provided to
the library users and administrators is immense specially considering their tremendous practical relevance and impact. CALIBNET is the first major venture in the field of library automation and networking in the Indian environment under the sponsorship of NISSAT. The features of its 6 modules viz., acquisition and fund accounting, serial control, circulation, cataloguing, binding control and central host services are described.


CALIBNET is being established to serve the collective interest of Calcutta's institutional libraries by means of computer-based library automation and networking, aimed at optimum, utilisation of bibliographic resources of these libraries by a mechanism of resource sharing and electronic access. The prime objective is to institute systematic interlibrary cooperation and document delivery amongst the libraries of Calcutta. It will have online access to international databases at NSC (Network Service Centre). It has a prized collection of international databases on CD-ROM.
CALIBNET convenes brain-storing on RETROCON. NISSAT Newsletter. 11, 3; 1992, Jul-Sep; 10-11.

CALIBNET having reached an advanced storage of implementation, retrospective conversion (RETROCON) of bibliographic records in its participating institutions has been under active consideration. The vexing question is to identify the most suitable method of RETROCON amongst the various options available. Consequent to the recommendations of the third meeting of CALIBNET coordination committee, a two-day brain storing session on the theme of RETROCON was conducted by INSDOCRegion Centre, Calcutta recently.

CHILDREN'S LITERATURE


Children's literature is increasing in every country in the world. Children's literature reflects the values of our societies and transmits those values to children. The institutions involved in distribution (i.e. libraries) and the roles and objectives needed to achieve library development. Very soon the considerable advances in technology and bibliographic control resulted in funding an office and some
personnel in a program entitled universal bibliographic control which anticipated networking across borders.

-,-, DATABASES BY CDS/ISIS use of CCF

119. SHAILENDRA (K). Networking databases created by CDS/ISIS using common communication format tags. Library Herald. 27, 1-2; 1988, Apr-Jul; 9-12.

Networking is a linkage of working procedure for the exchange of information resources. It has been observed that computers in a building, in an area and in a city work in isolation. Each unit prepare its own data base(s) and uses to it fulfill its aims and objectives. Makes a plea for the use of Common Communications Format (CCF). The steps involved in the conversion of arbitrarily used tag numbers and data elements to CCF. Data exchange programme. A list of elements in CCF.

-,-, DATABASE use of CATALOGUE STUDIES


The need of catalogue use studies, particularly in the context of database development for networking is discussed. A review of literature on the subject reveals that most of the studies are conducted in
western countries which may be grouped in three categories viz., i) user studies, ii) studies relating to search failures, and iii) experiments with methodological aspects. The need and importance of more such studies in the Indian context, particularly in view of library network development in the country have been stressed.

DELNET


The limitation of financial resources and space for housing library collections in the libraries in Delhi led to the promotion of sharing of resources by automation and networking and the establishment of DELNET in 1988. An attempt has been made to show the status of the databases created and the softwares and format being used in Delhi libraries. Progress made in the field of rationalisation of periodical acquisitions is also described. With the operation of E-mail more attention is being devoted to the monitoring of standards of the bibliographic databases. Work on the compilation of union catalogue of books has begun. Stress has been laid on the use of modern technology for the library professionals.
DELNET sponsored by the NISSAT, Department of Science and Technology. Objectives of DELNET are to promote sharing of resources among the libraries by developing a network of libraries, storing and disseminating information, offering computerised information services to users, and to coordinate efforts of suitable collection development and reducing unnecessary duplication wherever possible. Information on funding and the hardware, software infrastructure is also provided along with databases and services.

When a group of libraries using computers decide to exchange information through the computer applications a network is developed. DELNET as a separate body. Its main aims and objectives: i) to promote sharing of resources, ii) to assist member libraries in cataloguing of books, serials, non-book materials and catalogue production, etc. DELNET propose to undertake the preparation of a union catalogue of
serials and periodicals in humanities and social sciences available in Delhi libraries. The project is under the consideration of NISSAT.


There have been some important and useful initiatives in the development of library automation software. Some special libraries notably at BHEL R&D, SAIL, ICRISAT, INSDOC, NIC, DESIDOC, IIT Kanpur etc. have successfully developed software for library automation. A distinction is made here between infrastructural networks and application networks. The former are those that provide the hardware, software, protocols, and free ways for the free flow of information. Application networks are those which are set up by or for a specific community using the infrastructure to serve well defined end users.


To promote resource sharing among libraries in
the country, library networking efforts using computer. Communication technologies started during the late 1980's. The main problems in early operationalising the library networks include retroconversion of holdings data non-availability of suitable software for operating large databases and online searching in a wide area network mode at prices affordable by all the libraries, lack of adequate standardisation and non-availability of adequate training facilities to cover all the library staff participating in the network programmes.


Networking is one of the most effective ways of sharing the resources which are always scarce to meet the information needs of the users whose number, variety and expectations are constantly rising. Networking is not a panacea for all the ills or deficiencies with which the present health sciences libraries system is suffering. The extent to which it can effectively solve the problems summarised earlier, depends on the participating institutions willingness and ability to carry out network obligations assigned
to them and utilise the services for the benefit of the users.


The kind of information required about the problems and the community for planning, implementation and evaluation of health service programme. Makes out a case for national network of health information system. The nature of user community. The nature of services, modern equipment required at different levels in information centres/libraries. Pleads for legal status for national medical library.


It becomes essential that the libraries in India cooperate between themselves and share the resources for mutual benefit and to improve the qualitative information being provided to the physicians in the nation. Coming together will be a step forward in realizing the benefits of the facility called 'networks'. The networks are the result of an urgent
need faced by libraries, as their collection is sufficient to meet the demands on biomedical information.

-,-, INDIAN MANUSCRIPTS

129. CHOPRA (HS). Indian manuscript network. Library Progress. 40, 1-2; 1994, Jan-Dec; 46-8.

INMSNET stands for Indian Manuscript Network. Manuscripts are reminiscent of the past development of any society and raw materials for a number of subjects. Manuscripts are the source material for various subjects like literature. History, religion, medieval studies, philosophy, linguistics etc. National Manuscript Library will have microfilms of all the manuscripts of the country. Now days it is very essential its established Indian Manuscript Network.

-,-, INDONET


The development of networking in India with special emphasis on project INDONET, India's first National Computer Network. The primary objective of
project INDONET is the establishment of a network of computing centres accessible from remote parts of the country so as to deliver the benefits of information resources management to a wider section of users in the country. This will enable, among others, the predominantly large, primary sector as well as industrial and service organisation in remote areas to have access to effective and modern information techniques.

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The types of industrial information and assessment of information needs of entrepreneurs. Describes the existing institution framework for development, regulatory, technological and market information for the assistance of entrepreneurs. Traces the evolution of National Documentation Centre for Small Enterprises (SENDOC) at the National Institute of Small Industry Extension Training Institute (NISIET), located in Hyderabad, and its role in promotion of entrepreneurship. Present's a proposal by Small Industries Development Organisations (SIDO) for the National Network of Industrial Information by linking
existing organisations, working for the development and promotion of entrepreneurs for effective transfer of information to the needy entrepreneurs.

-, INFLIBNET


The University Grants Commission (UGC) constituted in 1988 a Committee on National Network System for universities/libraries to suggest measures to network libraries in the country, so as to share the literature resources towards optimum utilisation and to avoid duplication in holding to the extent possible. INFLIBNET is a computer communication network of libraries and bibliographical information centres. It is a major national effort to improve capability in information transfer and access that provide support to scholarship, learning, research and academic pursuit.

-, PROGRAMME


The INFLIBNET programme was started by the UGC in April 1991. It is a cooperative venture for polling, sharing, and optimisation of library resources in the
country. Aims to provide a channel to the academicians and researchers for exchange of information from sources within the country and abroad. UGC is contributing towards computerisation of university libraries in India by providing grants and training. Problems: i) different libraries were using different standards and formats for data entry work, ii) getting data from libraries and putting them into a centralised database.

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LIBRARY and INFORMATION


Two or more organisations engaged in a common pattern of information exchange through communication links for same common objective; and interconnected or interrelated group of nodes is a library network. The objectives; i) to improve capabilities of information handling and service, ii) to provide ready access to document collection of libraries etc. Explains the types of networks with suitable examples, such as 1) Infrastructural networks, 2) Application networks major, networks in the field of library and information science in India giving necessary details, special features thereof, comings, if any, and future programmes for further development of the same.
The application of modern technologies such as microcomputer networking in a library environment resulted in the saving of time for the staff and of the user. The need for networking a library with various constituent units of its parents organisation. A case for building a microcomputer based local area network is put forth to achieve this goal. Compares the characteristics of a mini computer based system with micro computer based system.

The need for planning while buying computer hardware for information retrieval and library automation purposes in special libraries. The steps taken in choosing a candidate system as per the requirements identified already. The plus points of LAN and draws comparison with a distributive system. Analyse the system components and peripherals which are available and justifies the selection of the right one.
for the LAN configuration in terms of technical and cost considerations.

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137. RAGHAVAN (R) and RAGHAVAN (Jaysri). Notable features of MALIBNET. *DESIDOC Bulletin of Information Technology*. 16, 2; 1996, Mar; 47-56.

MALIBNET was registered as a society in February 1993 and the network became operational in June 1993. Bring about cooperative working amongst the libraries and information centres in the city of Madras, evolve network of libraries and information centres in and around Madras, and facilitate sharing of resources among the libraries and information centres and promote information dissemination. MALIBNET is claimed operational in a short span of four months after it is registered as a society and that too without government support except that of INSDOC.


The world has been witnessing knowledge and information explosion during the past few decades. The situation can be managed only through resource sharing
which can be realised by networking of libraries and information centres. MALIBNET (Madras Library Network is an attempt in this direction which has been conceived by academicians, scientists and technologists of Madras to overcome the resource crunch to libraries in and around Madras and provide information at a low cost to the users. INSDOC, the national leader in the field of information management and services, is the executing agency for the MALIBNET project.

-,-, METROPOLITAN, OVERVIEW

139. ANIL SINGH and PRASAD (RC). Metropolitan library network in India: An overview. Library Progress. 16, 2; 1996, Jul-Dec; 77-82.

Computerized library network is a system which provides the facilities to connections among libraries to share library resources. Objectives and establishment of various library networks like INFLIBNET, CALIBNET, BONET, MALIBNET and ADINET in India. The efforts made by the Planning Commission, Govt. of India, to promote resource sharing among libraries in the country, have also been discussed. The present scenario of library networking.
In any non peer to peer network environment, there is no direct path between every pair of computers and/or terminals that may wish to communicate. The needs same for of switching within the network. 1) Circuit switching, 2) Message and switching, 3) Packet switching, and 4) Hybrid switching. Suggest a cost effective solution for wide area networking for different purposes for Indian environment in inter networking the "telematics" and "computer communication" as it is being done in some of the developed countries in the world.

States the need to provide public access to latest information and the role of public libraries in developing access to internet and international databases and networks. Refers to unesco manifesto and its emphasis on public library networking stating also its advantages and the need for qualified manpower.
Discusses the required hardware and software, use of CCF, application of standards, use of communication system, network topology, network management and linkage with Internet services. Indian universities are of no use for a network like DELNET unless they have sufficient training in computer and communication sciences.

-,-, NETWORKS, RESEARCH LABORATORY

142. NITYANAND (B), KARWANYUN (SN), SRIVASTAVA (SC) and DHAR (BB). Layered structure of computer networking for efficient management of a research laboratory. *Annals of Library Science and Documentation*. 40, 4; 1993, Dec; 138-45.

Office automation is gradually making headway in various organisations. Local area network (LAN) with different protocols in accordance with the open system. Inter connect (OSI) of the interconnect standards organisation (ISO) is suggested for the purpose. A layered structure for the application layer i.e. the 7th of the ISO-OSI is suggested for a research laboratory. Utilisation of the research results are assigned the 4th layer as an output layer. An automobile dataflow system is suggested for smooth flow of data among various layers or various activities within a layer. Advantages of proposed system are also described.
Towards a need-based information network for rural development. SISCOM. 13, 1-2; 1993, Jan-Feb; 17.

The information requirements for rural development in relation to the users and their needs. A distinction has been made with regard to information for development and information about development. In view of the diverse nature of preferences of the development community it is proposed to promote networking capability among the bibliographically oriented information centres in the country. This is to facilitate collection, collation and dissemination of information generated at various levels for decision making purposes. The role of the centre on Rural Documentation at NIRD (National Institute of Rural Development) in the network is also indicated.

TIFACL ine: An online network technology information system. SISCOM. 11, 1; 1991, Jan; 19.

TIFACL ine is aimed to be a nationally networked technology information system for online access. TIFACL ine is being set up currently by the Technology
Information Forecasting and Assessment Council (TIFAC) under the Department of Science and Technology. The project is currently nearing the end of its pilot phase and the first demonstration of the system prototype was held at the International Conference for Computer Communications-90 (ICCC-90), 4th-8th Nov. 1990, New Delhi. The system primarily aims at integrating technology information available in various institutions and organisations in the country. A user can access TIFACLINE system through normal telephone lines in metro cities, as long as there is a modem connection and terminal at the user's end.

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UK and SPAIN effect on INDIA


The progress of library automation in European countries pointing out the recommendations made by the council of Europe Committee of ministers in 1989. Describes in detail the networks in UK. Describes bibliographic networks in Spain, specifying the role of the National Library automation in public libraries, automation in universities libraries and automation in
special libraries. Gives detail of CSIC data bases. Makes abroad evaluation of the study suggesting the need for automation programmes in libraries in India. INFLIBNET started by UGC could atleast serve this purpose.

---, WOMEN STUDIES


Area studies pointing out the place of women studies. The status of women in India society stating also the social legislation for the protection of the rights of women. Despite the constitutional and legal safeguards, women are still discriminated. The situation available in India where there is lack of leadership among the female librarians. There is increased awareness of software packages and online searching. Several networks have already been planned and some are in operation. The influx of computers, backed by strong databases, has changed the entire scene of information activity. Women studies database shall have to be set up on the lines we have applied for building up databases in other subject areas.
147. MAHAKUTESHWAR (HY) and SANGAMESHWARAN (SV). national information centre for food science and technology (NICFOS) computer centre: Its development, present activities and future plans. Library Science with a slant to Documentation. 24, 2; 1987, Jun; 78-88.

In view of the infrastructural facilities as well R&D base of the highest quality available at the CFTRI Mysore, the Deptt. of Science and Technology (DST), Govt. of India, choose it as the location for the NICFOS under its NISSAT program. Development of software and hardware configuration. NICFOS act as a clearing house providing the collection, organisation, storage, retrieval, dissemination and analysis of information on all aspect of food science and technology and related areas.

- NICMAP, SDI SERVICE

148. SDI service at NICMAP. NISSAT News Letter. 11, 2; 1992, Apr-Jun; 29.

NICMAP has introduced the SDI service under the membership scheme. It will store subject profile in the computer and once in every two months search will be made of newly added references and printout of bibliographical references are sent to the members.
Thus, the SDI users regularly get the latest references on the subject of their interest during first week of every alternate month. The main advantage of SDI service is that the user can indicate his subject interest once and the list of references on this subject will be sent to the user routinely every two months.

-ZORN (MJ) and MARSHALL (L). Graphical user interfaces and library systems. Special Libraries. 86, 1; 1995, Winter; 28-35.

The graphical user interface (GUI) is impacting library application software. Despite this trend, user satisfaction with the GUI has not been documented. Including a survey assessing user satisfaction and a review of overall usage. The GUI based OPAC was preferred by end users over the text-based OPAC. Findings with significantly increased usage after migration.

- ROSS (James). Geographical headings online. Cataloguing and Classification Quarterly. 5, 2; 1984, Winter; 27-44.

Subject headings incorporating geographic terms
present a number of problems for online searching and for other purposes given the diversity of subject heading structures seen in machine readable records. Factors observed include changes in heading structures, human error, the online authority verification process and ambiguities in subject heading instructions for catalogers. Problems structures and statistics for same specific heading variations are presented, searching implications and alternative heading variations are presented, searching implication and alternative heading options are examined.

-,-, INFORMATION RETRIEVAL

151. DEODHAR (VH) and SINGH (RS). Online information retrieval. SISCOM. 12, 1-2; 1992, Jan-Feb; 21.

Online database in library and information centres help to give information. The scenario of interactive searching of international computerized databases in India. The database in science and technology, database vendors and different modes of access. Preparation of search strategies, conducting the search and getting the search results/output are explained. Experiences of online searching at NCL (National Chemical Laboratory) are narrated.
152. KUMAR (A) and SRIVASTAVA (RK). Online interactive bibliographic information retrieval system. *Library Science with a slant to Documentation*. 24, 3; 1987, Sep; 173-84.

System which matches descriptor based queries against invested descriptor data base. Objectives. To plan, analyse design and implement an online interactive computer based integrated information storage and retrieval system on technologies of interest to defence. System, design, software package used and I/O design details. Methodology for obtaining multiple outputs from single input is outlined.

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The online system for information retrieval has advantage: search process is interactive, step by step search strategy etc. Evaluation of database and emergence of vendors which market the information services on global basis. The systematic process of online searching with suitable examples and cost analysis. Suggests improvement to be made for efficient IR.

The developments in computer and communications technologies have made it possible now to access information stored in host computer through 'terminals' from various remote locations. The basis features of an online information system for India. Presents a cost analysis for installing an international connection to online service in a resource sharing basis. INDONET provide international access.


Online that means that the user is in contact with the computer through some direct linkage. In practice, it implies very much more and now is accepted as being same kind of individual terminal attached to the computer either by a direct line or over the telephone network. Sanction of the Department of
Telecommunications was obtained for allocating a leased data channel to link the terminals in NAL to the ESA computer centre in Fraseati via national and international telecommunication network.

-,-, SEARCH

Online is a product of three technologies. Computer, information and communication. It emerged as a cost effective solution to the problems posed by information explosion problem in storage, organisation for efficient retrieval and dissemination. The telecommunication alternatives, productive interaction using search aids, the result of information retrieval particularly bibliographic reference retrieval.

-,-,-, INFORMATION RETRIEVAL, AWARENESS

Most academic scientists are aware of the existence of computerised databases, but only small fraction use them. In 1990's the use of data bases is likely to increase dramatically as scientists have more
experience with the excellent results obtainable from online literature searching. An attempt towards online searching in all broader perspective with elaborate its advantage and use. Online searching and its feature with reference to Indian libraries and information centres.

-, -, -, SUBJECT ACCESS, TECHNIQUES

158. ENSER (PGB). Some approaches to online subject access. Library Science with a slant to Documentation and Information Studies. 25, 1; 1988, Mar; 27-36.

Access to the information contained documents is mainly done through a catalogue. The surrogation structure in the catalogue manual or online machine type is based on subject descriptions. While harrassing the capabilities of online subject catalogue we should develop a multiplex and network presentation of the universe of knowledge. Such a presentation would provide a proximate subject access to content of the documents to the users of knowledge.

-, -, -, TECHNIQUES

159. DRABENSTOTT (Karen M) and WELLER (Marjorie S). Testing a new design for subject searching in online catalogs. Library HiTech. 12, 1 1994; 67-76.

Library users continue to experience difficulty
in using the online catalog, particularly in the area of subject access. This project describes a test of new design for subject access to online catalogs. The new design requires a wide range of subject searching capabilities and search trees to govern the system's selection of searching capabilities in response to user queries. Is the performance of search trees superior to subject searching approaches chosen at random? This project is geared to make that determination.

160. RAINA (Roshan) and MISHRA (Rajesh K). Online search strategy: An experience. Lucknow Librarian. 24, 2; 1992, Apr-Jun; 63-7.

Online Information Retrieval System (OIRS), frequently referred to as interactive or conversational systems, facilitate interaction between the researcher and the databases through computers, through communication lines OIRS has emerged as a very powerful tool to bridge the gap between the ever increasing knowledge output on the one hand and the ever increasing information needs of the users on the other, in a most cost-effective manner. Results can be sent percent target oriented if the searcher commands analytical ability, communication skills and assumes
the role of a partner with the user in the search process.

SERVICES, IMPORTANCE

161. MALVIYA (Ramanand) and SUNDARARAJAN. Online services for library and information centre and its importance. *Library Science with a slant to Documentation and Information Studies*. 33, 2; 1996, Jun; 93-100.

Due to improved communications and neworking, researchers, academic institutions, students, etc. are beginning to discover the potential of information retrieval from online database services. Information, communication and networking technologies are providing the professionals with new opportunities to improve their resources and services. Online data base have a number of advantages especially if conventional paper searches are still their main means of obtaining information.

PATENTS


The Patent Office was established in Calcutta in 1856 during the British rule primarily to reserve the vast potential market of India for the products
manufactured then in Great Britain. The modern technology has been adopted internally by all the patent offices of the world, installing sophisticated computers and other machineries. Several databases had been made, CD-ROM already been applied to the patent documentation, microfilm technologies has already been taken place instead of paper form. The automation plan of the patent information system, Nagpur and the position of the Patent Office Scientific and Technical Library, Calcutta in that respect has been considered.

---, CSIR, NETWORK


CSIR supports a network of 39 laboratories with about 100 extensions and regional centres throughout the country. Describe how its patents unit publicises the importance of intellectual property protection throughout the network. Small centres have been established in all the laboratories as an interface between the scientists and the patents unit to assist the processing of patent applications and the dissemination of information.
-,-, use of ONLINE SYSTEMS, SDI SERVICE


Patents are the vital source of information in industrial world. Highlights the advantages of using online system i.e. saving in users time, facility for revising the profiles etc. SDI service based on online databases is far superior to one offered by manual methods. The quality of output depends on proper understanding of users requirements and translation of the same into suitable profiles. It was found to be more economical to have a group profile for several readers having research interest common to each other.

-,-, PERSONAL COMPUTERS, NATIONAL AERONAUTICAL LABORATORY

165. MURTHY (SGK) and PRASANNA (KN). Integrated library automation experience of NAL using PCs. Library Science with a slant to Documentation and Information Studies. 26, 3; 1989, Sep; 186-216.

The library automation system established using dBase 3 in ICAINAL, including library documentation acquisition system. The system can generate various service by products, such as reminders for over due documents to the venders, financial status, order
generation, etc. The aim is to put relevant data at appropriate stages of the automation system and integrate it with the library acquisition, circulation and generation of current acquisition lists and develop an appropriate information retrieval system.

- PROBLEMS, VIRUSES, PRECAUTIONS

166. RAJU (MJM) and JAMUNAL (S). Computer viruses: Precautions to be taken by libraries/information centres. Iaslic Bulletin. 40, 4; 1995, Dec; 165-7.

Computers are playing a vital role in the management of libraries/information centres. They are being used extensively be it for an online search or for sending a reminder letter. A computer virus is an agent of infection, in simulating itself into a program or disk and forcing its host to replicate the virus code. Types of viruses i) Boot sector virus ii) file virus iii) multipartite virus. Precautions i) always monitor command.com during your boot sector (start up) sequence, ii) never boot your computer from a floppy, iii) never allow your diskette to be used in another computer etc. to be taken to protect computer system in the present day in libraries or information centres.

Automation traditionally has been viewed as an inappropriate means of control of the unique items in special collections libraries because of its fundamental requirement of standardization. It has come to be viewed as an excellent means of control of and access to these items by curators who view the special collections library as a system precisely because of standardization. Studies the issue of standardization in the application of computerized automation specially to rare books and art objects.


Typing and retyping of the same information, problems related to ever increasing bulk of reference cards and limitations of manual searching of information forced us to think for computer application in the information work. Application of dBase III plus program running on a PC to record and retrieve bibliographic details of journal articles. Creation of
files, entering data and getting print output in a specific format. Method of searching specific information from the stored references and compilation of bibliographies.

-, RESOURCESHARING, FUTURE


A critical factor in forecasting the role technology will play "in resource sharing" in the decades to come is the manner in which scholarly information is developed, shared and transmitted. This has changed so drastically that it will be a challenge to librarians to find their place in this brave new world of communications and access. The user use the network to access the information of their own library as well as the other libraries.

-,,-, PERIODICALS, IIMS


The libraries with their limited financial resources, face serious problems in managing enormous information. How the need of resource sharing among the Indian Institute of Management (IIMs) is discussed. The
pressing need for resource sharing has prompted several national level projects to go in for library networking. Broad area wise scheme of resource sharing of current periodicals is illustrated and an extension of the same to include other high cost learning resources as well as other library activities and services is proposed.

--, SCIENCE AND TECHNOLOGY, INFORMATION, SEARCH

171. SHARMA (SK) and KUMAR (Vinod). Search of information in science and technology. Library Progress. 13, 1-2; 1993, Jan-Dec; 31-6.

Information is the major resource on which quantitative development of our society is based. The individual worker searches out the information needed from the mass of published material, the trend is towards easier, simpler methods, again using computers. As more organisations install local area telecommunications networks, linking together all the computing facilities within a site or campus the possibility of an individual being able to search for and obtain the information needed from a work station in his or office becomes are step closer, full text journal database would be automatically searched by computer to locate copies of the paper.
172. RAJASHEKHAR (TB). Microcomputer based SDI and online search system for life sciences. *Library Science with a slant to Documentation*. 23, 4; 1986, Dec; 223-44.

A major objective of the National Centre for Science Information (NSCI) is to provide current awareness to the science faculty members in Indian Universities and other educational institutions. Life sciences, Botany, Zoology etc. is one of the major science disciplines for which NSCI is offering SDI services. The weekly update tapes issued by Bio-sciences Information Service (BIOSIS), USA is input to the system. The service consists of a batch SDI and an online search facility, software for which has been implemented on a microcomputer system dedicated to information handling.

173. RAMANANDA (BS) and CHANDRAN (Kanjitha). Developing a computerised SDI service: A case study. *Library Science with a slant to Documentation*. 24, 1; 1987, Mar; 29-45.

The importance of SDI service to engineers. The need for in-house software development. Problems encountered in developing the computerised SDI system. The encouragement received in developing the in-house SDI system and the need to meet the user information
requirement correctly and expeditiously is taken note of the challenge of developing an effective SDI system and the need for innovative and purposeful interaction between information scientists and R&D engineers is recognised.

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**use of CDS/ISIS**


Library automation helps in providing efficient and quick library services; it is economical because it saves human labour by eliminating duplication of jobs in a library. Automation is a very helpful in the routine jobs of a library. Explains the features of CDS/ISIS package and examines its capability in terms of handling multiple databases. Explains the functions of program written for SDI services. English program/database structure (FDT) printformat (PFT) and field select table (FST) etc.

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**use of MINISIS, CENTRAL WATER and POWER RESEARCH STATION**


This paper presents a case study of SDI service
provided by Central Water and Power Research Station (CWPRS) library involved in research and development activities of water resources area by using Hewlett Packard (HP) 300/series 58 computers and MINISIS software. The databases used for providing SDI is also used for undertaking retrospective searches. The user feedback study indicated that by and large the service is catering to the information needs of CWPRS scientists and engineers.

-, SECTORAL CENTRES, NISSAT

176. SECTORAL centres move into fast lane as NISSAT promotes new sand information systems. NISSAT News letter. 11, 2; 1992, Apr-Jun; 12-22.

Needs to happen in the science and technology information scene in India. Though information may still not be available on top. A strong foundation has been laid with the setting up of NISSAT sectoral centres for systematic and orderly growth of a compatible set of information systems. The NISSAT programme is planning to experiment with modern information handling tools and techniques to serve the interests of national community of information users more efficiently so as to promote rapid economic and social development.
177. MAJUMDAR (Kamalendu) and KATNA (AK). Making serial collection online: A preparation at Indian institute of technology, Kharagpur. *Library Science with a slant to Documentation and Information Studies*. 33, 3; 1996, Sep; 148-52.

The introduction of the computer systems and consequent adoption of automated means have considerably improved the growth and the use of book database of the central library at Indian Institute of Technology, Kharagpur. Need was increasingly felt to monitor serial control using computer system. The authors assumed responsibility to develop a database of the holdings of the journals. This paper describes the experience gained while designing and repairing back volume database in electronic format. This database is available on campus LAN and world wide through ERNET.


Automation of serial control helps us to handle serials more easily, quickly and less expensively. This system is quite complex and slightly different from
that of a simple book ordering system. Objectives, various functions and the file requirement of an automated serial control system. The limitations and possible remedies. Some of the works done on automated serial control system at national and international level.

use of D-BASE III, SPACE APPLICATIONS CENTRE

Information is an essential resource for development. The efforts made for a periodical management system development and designed for implementation in SAC library, using DBASE III software. It briefly describes the computer programmes and highlights the present system which is implemented by using LIBSYS, a comprehensive library software package and a multi-user system on pentium system, under Unix environment.

SURVEY 1988

Availability of current and timely information
has been facilitated by technological developments in information and transmission. During the year 1988, Indian libraries and information centres have mainly concentrated on the training of professionals in the use of computers and software packages and also developed the databases in various fields. Provides the chronology of activities and an overview of the activities.

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SOCIAL SCIENTISTS, INFORMATION NEEDS


The needs of social scientists in India are satisfactory being taken care of NASSDOC-ICSSR among other documentation centres i.e. active in diversifying and strengthening its services. Another encouraging recent development its services. Another encouraging recent development is the launching of the Asia-Pacific Information Network in the Social Sciences (APINESS) by a group of 17 countries in the region. This should help to fill the communication gap and to coordinate the activities of the various information centres in the participating countries.
182. New software and databases available with NISSAT.

NISSAT Newsletter. 11, 2; 1992, Apr-Jun; 8-9.

Internationally developed data analysis and management software (IDAMS) is a set of computer programs for the validation, manipulation and analysis of any data that is in the form of values for the same set of items for each set of cases, e.g. a survey, information about jobs run on a computer, a database of used cars etc. One feature of IDAMS is that it provided facilities for extensive data validation before embarking on data analysis. The software can be used without programming skill or knowledge.

183. KASHYAP (MM). Integrated database design for a library system employing library techniques developed by Ranganathan and CDS/ISIS database management system.

Journal of Library and Information Science. 18,2; 1993; Dec; 82-141.

Computerized library information systems. Examines the rules stipulated of SR Ranganathan in his classified catalogue code (Eds) (CCCS) for the construction of catalogue and preparation of documentation lists or bibliographies from the point of view their relevance and suitability for creating
bibliographic data bases of various kinds and forms of documents. In developing online catalogue or online bibliographic databases, it is neither essential nor desirable to follow strictly the rules of a specific traditional catalogue code. Such as AACR-11 or CCC5. The details of the actual implementation of the design is CDS/ISIS environments is given.

-, -, compared with DBASE III+

184. MAKHIVA (Hemlata) and DATTA (Subarata). Salient features of CDS/ISIS and dBase III plus packages in designing and creating a bibliographical database. IASLIC Bulletin. 36, 2; 1991, Jun; 61-8.

A database conceived to provide an online facility to identify and locate any particular document. The database consisted of reports. Survey reports, draft and final reports of various projects undertaken by the Calcutta Metropolitan Development Authority (CMDA). Two packages were developed in CDS/ISIS ver. 2.3 and in dBase III plus separately. Intention to develop this package in two different software was to find out actual difficulties and advantages of these two packages.

CDS/ISIS is a generalised information storage and retrieval system for the management of structured textual databases. Its application in creating a database on space technology. The potential application of CDS/ISIS is put to test at SHAR library by creating the database on space technology literature relevant to SHAR activities, by name "ROGER: This database is used to generate CAS and SDI services etc. Based on the experiences with this software a few additional features are suggested to be incorporated in the software.

186. CHOWDHURY (GG) and CHOWDHURY (Sudatta). Text retrieval and library management software in India. *NISSAT News* letter. 13, 3; 1994, Jul-Sep; 13-7.

Automated text retrieval and library management systems have not yet taken a desired shape in Indian libraries, though efforts are being made in this direction. A number of software packages for this purpose have come out recently through government and
private agencies. Aims to highlight the present Indian scenario by presenting a brief overview of 10 selected indigenous packages, namely CATMAN, CDS/ISIS, LIBRARIAN, LIBSYS, MAITRAYEE, MECSYS, NIRMALAS, SANJAY, TULIPS and WILISYS. The underlying framework and text retrieval and library management facilities in these packages.

-,-, dBASE 3+


Libraries in India are gaining access to micro computer facilities, yet little progress has been achieved so far towards library computerization. Library use of general purpose software has concentrated on routine applications. Relational databases like dBase have potential to solve problems of variable length of field, variable record structure and repeatable fields. A pilot project designed to address these issues demonstrates that dBase can provide workable solutions.
Software documentation and standards which occupy an important place in software engineering process. The need of a software librarian as a part of software engineering team discussed. He constantly interacts with maintenance staff, development teams, system supervisor, review team, testing team etc. The librarian acts as a controller, coordinator and potentially an evaluator of the software configuration. Quality indicators for software documentations are presented.

The main features: i) Portability, ii) Design of IV+V software package. The principles underlying its design and architecture. Development of applications using the package. Opines that IV+V package could prove very useful in our present day context, especially when
the Indian computing industry is manufacturing microcomputer systems on which this package could be installed and used for developing information storage and retrieval systems and for automating library operations.

-,-, LIBRA


A new indigenous library software Libr A, an integrated library and information management software package for Macintosh family of computers, explains the functional operations of the six modules of Libr A viz. Administration, Acquisition, Cataloguing, Serials, Circulation and Online retrieval, highlighting some of unique features. Libr A limitation particularly in the Indian context.

-,-, PACKAGES, COMPARISON


A number of software packages for handling library related activities have been introduced in Indian market. It discusses in brief the framework, text
retrieval and library management features available with these packages and also the advantages and disadvantages of various software and their implications in the library environment. Brief outline of the modules and sub-modules of some prominent library software is also given.

-, -, -, INSDOC

192. COMPUTER GROUP development of software packages for bibliographic processing by INSDOC. Library Science with a slant to Documentation. 23, 1; 1986, Mar; 41-56.

The efforts made by INSDOC in software development activity. The important packages developed for bibliographic processing using IBM 360 and HP 1000 computer systems. The packages developed for the projects are i) National union catalogue of serials by A.M. Arora, ii) Centralized acquisition of periodicals by A.M. Arora, iii) Indian science abstracts author and keyword Indexes by S.R. Kundu, etc. Preparation for NSL (National Science Library) and a computer searchable database for INSDOC personnel, which could be utilised as a source for monitoring the administrative activities.
Several important issues related to computer software for library and information (L&I) work, in the Indian context. Acquisition of software, application areas in L&I field, single function and integrated software, general and L&I specific software current efforts in L&I software development in India, problem related to software development costs, portability, importing and software piracy. Computer hardware is no longer a problem for libraries intending to go for automation.

SANJAY - a library automation package developed by the Defence Scientific Information and Documentation Centre (DESIDOC), Delhi, for National Information System for Science and Technology (NISSAT), Department of Scientific and Industrial Research (DSIR), was released on 11 August 1995, in a special function held in Technology Bhavan, New Delhi. Based on CDS/ISIS, is a low priced library management software which runs on
personal computer and can support textual information in Indian scripts.

**-,-, SERIAL CONTROL use of D-BASE III+**

195. LALITHA (MR) and RAVICHANDRA RAO. Program package for automated serial control. *Library Science with a slant to Documentation and Information Studies*. 26, 1; 1989, Mar; 45-66.

Serials control involves several jobs such as recording the orders placed and subscriptions paid, the receipt of serials that arrive from time to time, detecting and claiming the missing issues etc. Automation minimises duplication in storage and renders the task and searching very much easier. Automated serials control system that has been developed using dBase III plus software. The input, processing and output for each module and file requirements for the system.

**-,-, TECHNICAL SERVICES effect of INTERNET**


Public services librarians become involved frequently with the planning process of the home page,
since they are traditionally the 'front line' of user service and are aware of specific needs of their patrons. Details of Internet sources helpful to the librarian in discharging various functions such as acquisitions, cataloguing, documentation, technical services, reference services, serials management and specialised resources management. Advantages in home page development for various categories of librarians.

- TECHNOLOGY WATCH - CD-ROM

197. CHAKRAVARTI (AK), VASANTA (B), SHROFF (N) and KRISHNAN (ASA). Technology watch CD-ROM. Annals of Library Science and Documentation. 42, 1; 1995, Mar; 27-34.

CD-ROM and CD-R belong to a family of optical disks covering besides these two CD-Audio, Video CD, laser Disc, CD-I, Photo CD, EMO Ds etc. The articles cover all objectives of technology. CD-ROM state of the art technology. Technology and industry; new technology and applications trends analysis; new investments made/planned companies, level of investments; new products/markets; new alliances-inter-and intra-companies/countries; and market/technology forecast as revealed in literature are discussed.
-., UNIVERSITY and COLLEGE

Use of computer in libraries in India has started to provide efficient services to library professionals and users. The possibilities of creating custom programmes for university and college libraries, which would be helpful to automatise the entire library functions. Due to the emergence of microcomputers and availability of the software made computer applications economically and viable.

-,-, of BOMBAY
199- IYER (PV) and PATKAR (VN). Determining for computerisation in libraries. *Annals of Library Science and Documentation*. 37, 3; 1990, Sep; 110-16.

Availability of fairly advanced micro computers and application softwares at affordable prices is now encouraging libraries to introduce computerisation in various services and in the management of housekeeping activities. A major problems faced while undertaking the computerisation especially by large libraries, concerns, deciding the sequence of activities to be computerised so as to satisfy the
expectations of various groups working in the library. An application of the interpretive structure modelling method to determine priorities among numerous areas of work. In the library of the university of Bombay.

---, LIBRARIES, PROSPECTS


Computers are bringing about revolution in informatics in the developed countries. Nevertheless use of computers in University libraries in India, yet remain largely a dream awaiting its translation into reality. Provides a brief history of the development of computer and its presence on the Indian scene. Observes that use of computers in Indian University Libraries is still in its infancy and awaits the establishment and development of the INFLIBNET. Identifies the future prospects of computerisation stressing artificial intelligence and telematics.
PART - III

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