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Retrospect and Prospect

Have we reached a plateau in the information revolution? One who has closely monitored the exhibits and followed up the deliberations in major conferences on information such as the International On-line Information Meetings in the U.K., National On-line or ASIS annual conferences in the USA would tend to agree that further progress has been just marginal.

Let us take stock of the trend of information technology in the last two decades. Computers used to be kept at one corner of a building safe behind expensive glass partitions. The blue vinyl flooring and teak panels or similar laminations, strikingly different from the rest of the building, added to the aura and mystique about these machines. Those who knew something about them were regarded as VVIPs in the organisation. Fortunately, the PC revolution helped break all these barriers and brought computers out in the open. Few will treat it as a miracle machine any more, when a primary school student knows how to play with it or a clerk could use word processing in place of a mechanical typewriter with equal ease.

Similar is the tale of photocopying. With the advance of technology one can now get copies on paper we normally use in place of those smeared with stinking chemicals. In due course, the machines came out of their airconditioned environs to office corridors and shops in street corners; unfortunately, however, the once much sought after reprographic officer had to find some other job to fend for himself.

In India, the micrographic technology did not make a mark. It was not popular even among its distinct target users. Now the time is against it. The new comer optical system with very high capacity and ease of handling, has demonstrated its capabilities.

The progress in telecommunication technology worldwide, cannot be comprehended by the Indian users. Inspite of all that is talked about, satellite or no satellite, microwave or optical fibres, from users point of view, the situation remains as it was in the distant past. The gap between us and the developed world in this field is too large. To cut the long story short, there it works, here it doesn't (A good exhibit in an Indian situation would be to set up a stall with nothing but a telephone working).

Getting back to where we started, further revolutionary development in information technology does not seem to be in sight. Computers have become smaller in size, larger in storage and of course faster in manipulation capacity. From location in large rooms, it resided for a while on desktop and is now in cosy comfort of the lap (some are more fortunate to fit into a lady's bag). Very soon, computers may displace calculators in their prime location and application. The throughput has been progressing inversely to the size. Its driving spirit, that is the software, can now befriend even the most non-sociable animal.

Similarly copiers can now produce clearer copies in large numbers. The machines have become compact and those who can afford, can add a spot of colour to their copy.

In information exhibits today, one does not see very many new items. For example, in the London On-line Conference held only two months ago, CD-ROM stack perhaps was the only new technological exhibit. Other developments could be considered more or less add-ons, decorative frills (e.g. graphic extension to retrieval software of business databases) or new ways of doing old things (e.g. library automation software). Computers, reprographic or micrographic technologies no longer find place in international exhibitions. The telecom industry also, may not have much new stuff to show, but their thin exhibition presence in the London On-line Exhibition was conspicuous.

One significant point to note was the relatively thin participation of the technologist compared to those involved in alerting. Even, in India one would not fail to note this point in large meetings like the CSI annual conference. Perhaps that's how it should be; technologists have, by and large, done their job, others should now play their role and see that the technological products and services are better utilized. We shall talk about it in the next issue. — A. Lahiri

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SIRNET Electronic Mail System

SIRNET, an acronym for the Scientific and Industrial Research Network is a computer communication network for the CSIR laboratories. At present SIRNET has only one mail node and a number of user nodes. Every mail node in a network is named and the present SIRNET mail node is known as csird signifying the CSIR mail node in Delhi physically located at INSDOC, New Delhi. It is connected to a larger network ERNET (Education and Research Network) set up by the DOE with financial assistance from UNDP. ERNET in turn is connected to the international network UUNET (Unix User Network) through which other international networks like BITNET, CSNET and JANET are accessible. In addition to acting as intra-city node for Delhi based CSIR laboratories and inter-city node for other CSIR laboratories, csird also acts as a gateway to ERNET and through ERNET to international networks. Any subscriber on this node is able to reach out to all the CSIR laboratories/institutions on SIRNET and to anyone who has an electronic mail address on an international data communication networks like, UUNET, BITNET, CSNET, etc. These networks together span all major countries — USA, Canada, UK, and other European countries, Australia and Japan.

The present electronic mail setup (Fig. 1) shows only the major mail nodes. A large number of user nodes which are connected to these mail nodes are not shown. The mail node csird is directly connected to Department of Electronic mail server vikram which acts as the clearing node in Delhi for ERNET. IIT Delhi node, netearth and JNU node, jnuniv are also connected to vikram. Consequently, anyone connected to csird can reach ERNET users in IIT, Delhi (about 15) and JNU (about 12) via vikram. All connections to vikram from csird, netearth and jnuniv are established using dial up telephone lines of Delhi Mahanagar Telephone Nigam Limited. These connections are established a few times a day when all the mail in each node is deposited to vikram and all the incoming mail is collected.

In addition to being a clearing node for ERNET at Delhi, vikram also acts as a forwarding/receiving node for mail to/from the node shakti at the National Centre for Software Technology (NCST), Bombay. Shakti acts as a national clearing node for all ERNET city nodes. The present ERNET city nodes are shiva of IIT, Madras, turing of IISc, Bangalore and vikram of DOE, Delhi. These city nodes dial up to shakti two or three times a day and collect/deposit mail. The national telephone network is used for this purpose. Public switched Telephone Network, PSTN is the internationally standardised term acronym for the national telephone network in every country. The NCST mail server shakti is connected to the UUNET in USA and in Europe and to many other networks (BITNET, CSNET etc.) via UUNET. Thus from csird one is able to send mail to any network anywhere on the globe.

User Node Setup

The equipment required for a user node is as follows:

a) A PC/PC-XT/PC-AT with MSDOS operating system.

b) A Stand-alone modem connected to the RS232C port of PC or an internal modem plugged into one of the available PC bus slots. A modem unit carries digital computer signals over analog telephone system with automatic dialling and redialing facility. The modem should be able to work at 300 or 1200 bps speed.

c) A dialup or leased PSTN link.

d) A communication software package that runs under MSDOS e.g. PROCOMM, or CROSSTALK of Microsoft Inc, USA.

INSDOC recommends

a) A PC-XT or PC-AT,

B) A stand-alone modem with error correction facility at 1200 bps,

c) A dial-up line start with, and

d) PROCOMM software package.

Mail Node Setup

In CSIR setup of laboratories and institutions, many a cities have cluster of these, thus expecting a number of electronic mail users at one site. The setting up of only USER NODES in these cities will not serve the purpose. For easy user interface and locally administered security, UUCP (Unix-to-Unix Copy) programmes will provide an interim solution for a true WAN (Wide

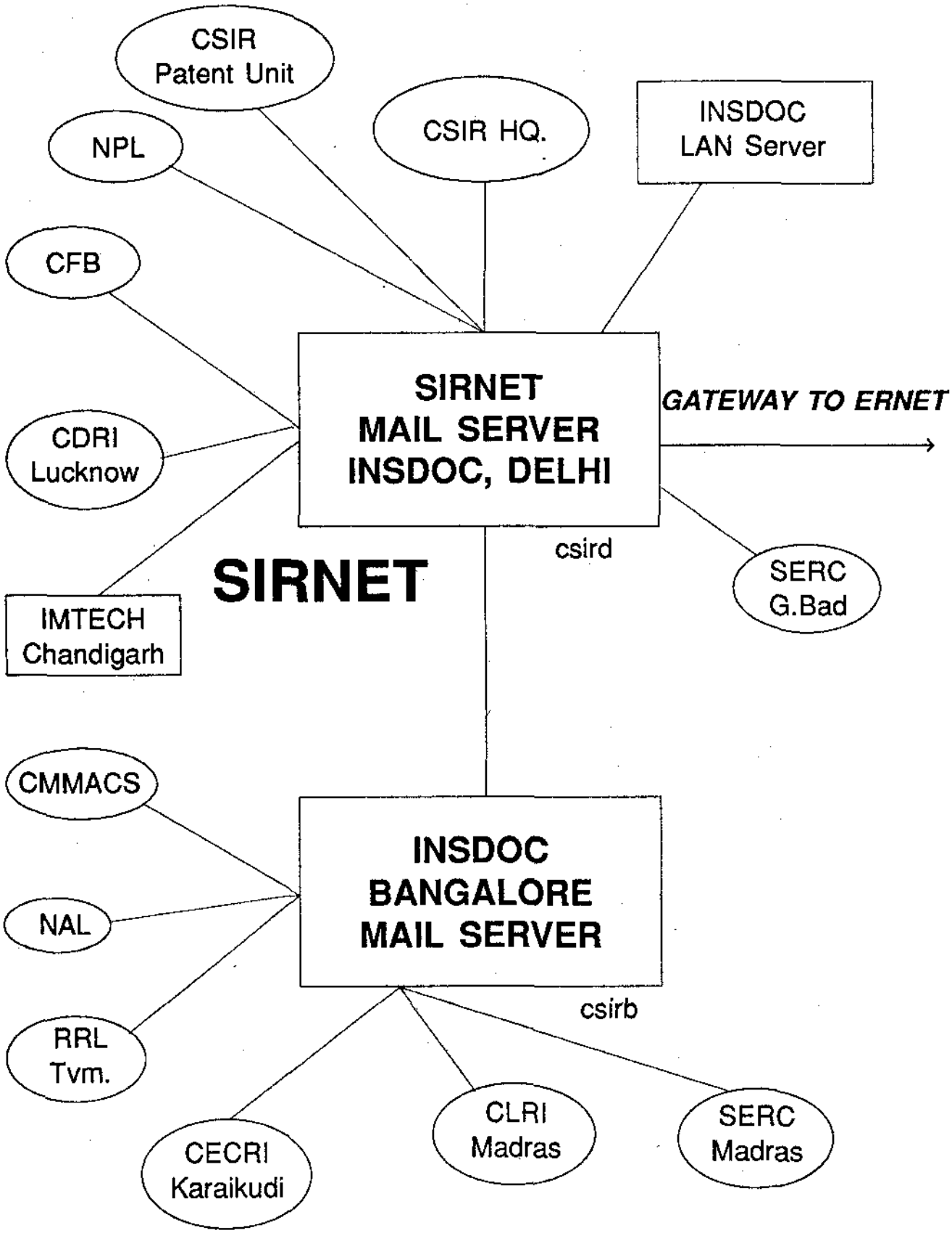

Fig. 1 SIRNET E-Mail Setup

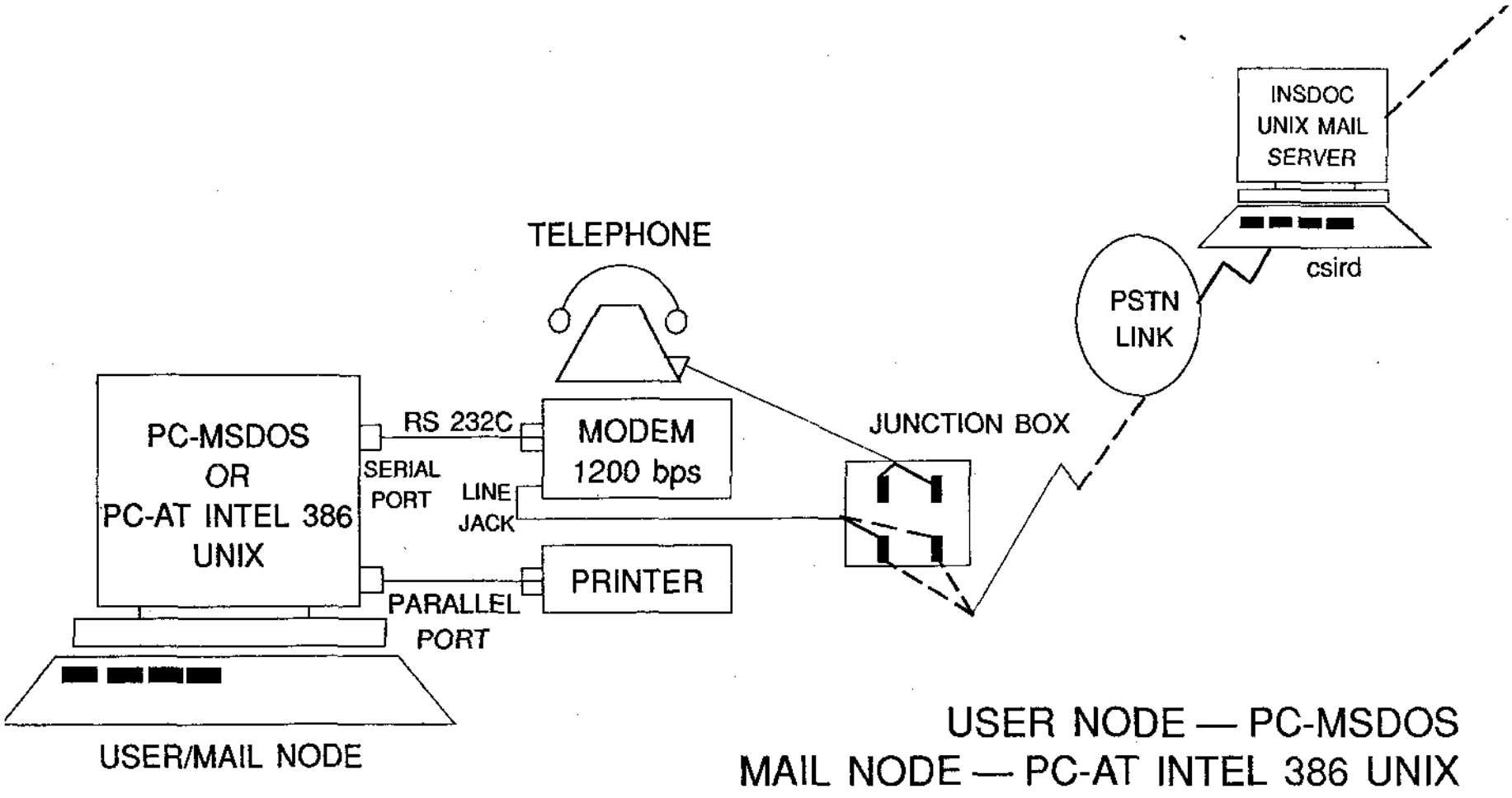

Fig. 2 User Mail Node Setup

Area Network). UUCP is a set of UNIX utilities provided along with the standard UNIX package for basic data communication like e.mail, remote login and remote file transfer among various systems and users.

The equipment required for a Mail Node is as follows:

a) A PC-AT-80386 UNIX machine with 1 MB RAM, 40 MB hard disk, 1.2 KB floppy disk, RS232C ports and parallel port.
b) A standalone modem with error correcting facility at 1200 bps.
c) A dial-up line with STD/local dialing facility, and
d) provision of Basic Networking Software (UUCP) with standard UNIX package to communicate with other UNIX system.

User/mail node set up is shown in Fig. 2.

How INSDOC Can Help?

INSDOC has developed expertise in establishing E-mail facilities. With the help of Networking Team, INSDOC offers to set-up USER NODES or MAIL NODES for Electronic Mail in CSIR laboratories and institutions on SIRNET.

Many CSIR organisations may already have some of the required equipment. INSDOC is able to extend its support at different levels depending upon the requirement:

Procure and install all the hardware and software, set up the node and train personnel.

or

Procure and install only the modem, set up the node and train personnel.

or

Only set up the node and train personnel

Electronic Mail

A word about EMAIL. Electronic mail is a popular and rapidly expanding form of communication that enables scientists and engineers to exchange electronically created messages over computer communication networks. Electronic mail systems are finding increasing use across Wide-Area Networks (WANs) that cover national and international geographical areas. They are also popular in Local Area Networks (LANs) that interconnect computer systems within a single building or a group of adjacent buildings.

EMAIL Systems permit a user scientist to send messages to a specific individual or to a group of individuals or to everyone connected to the network. Messages are entered as text files via a computer terminal or a personal computer that is connected to the network. The text file may be created and edited using a word processor or any other file editor. Alternatively, messages may be keyed-in directly to a remote mail node from a user node which may be a terminal or a PC. A mail node is a computer that is a part of the EMAIL network, which performs all mail related functions including mailbox management. A user node, which is a computer generally located at the user's desk, does not participate in the network activities. The user of a user node is registered with a mail node on the network, where a mailbox is assigned to him/her. The user logs in to the mail node and deposits or collects his/her mail. Mailboxes are usually maintained in the disk storage of the mail node.

If a recipient is not connected to the network at the time a message is received at his/her end, the message is held in his/her mailbox, until the recipient is ready to open the mailbox and read the message. A series of messages may be queued up in the mailbox.

On receiving a massage, the recipient may do one of the following:

Read the message,
Print out a copy of the message,
Save the message in a file,
Forward the message to someone else,
Add one's own comments, edit the message if required, and then forward it to someone else,
Destroy the message.

Institutions on EMAIL Network

1. Council of Scientific & Industrial Research, New Delhi
2. Department of Electronics, New Delhi
3. Indira Gandhi Institute for Development & Research, Bombay
4. Indian Institute of Science, Bangalore
5. Indian Institute of Technology, Bombay
6. Indian Institute of Technology, Madras
7. Indian Institute of Technology, New Delhi
8. Indian National Scientific Documentation Centre, New Delhi
9. Jawaharlal Nehru University, New Delhi
10. National Centre for Software Technology, Bombay
11. Tata Institute of Fundamental Research, Bombay

Magnetic and Optical Storage of Information*

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The apparent advantages of optical storage media over magnetic media have made the computer based storage system even more attractive and popular in recent years. The author dwells on some fundamental aspects of optical recording, production of CD-ROM and the equipment required to 'read' it. Relevant standards for physical layouting of data on the discs, logical file and directory structures, etc culminating in ISO: 9660-1987 are referred to along with some cost considerations.

Optical recording has its beginning in music and film recording. Rapid developments in the area of digital signal processing during the seventies made it possible to convert analog signals into digital data, and to covert the digital data back into the original continuous analog signal. More or less at the same time laser technology and sophisticated optics also made significant strides. Laser beam plays the important role or providing an electromagnetic radiation with a single frequency having no bandwidth at all. A spread in wavelength results in loss in fidelity. Sophisticated optics is also important in preserving the quality of data transmitted through the highly monochromatic laser beam, which has to traverse through a number of optical components. Developments in laser technology digital signal processing and in optics made optical discs of 30 cm diameter containing video recording of one hour duration possible. These optical discs, introduced in 1978 were also known as laser discs, since a laser beam is needed to record and playback the audio video programmes. By 1983 smaller discs of 12 cm diameter containing about 75 minutes of high quality music recorded on the disc appeared on the market. It did not take long for the development of optical discs for information recording. All the commercially available optical discs so far are such that writing on these discs can be done only once. Hence, these optical discs belong to the category of devices commonly known as "Read Only Memory"; or ROMs. The 12 cm diameter optical discs came to be popularly known as "Compact Disc", and since these are not yet developed beyond the level of Read Only memories, they are known as CD-ROMs. Each 12 cm CD-ROM, with information recorded on one side alone has a capacity of about 550 MB. One CD-ROM can hold the entire set of Encyclopaedia Britannica, or the multi-volume Oxford English Dictionary.

Leaving aside minor variations in the technologies, most optical discs used for data recording have three layers of materials on the disc. The lowest layer is a hard material and is meant to retain the shape and physical integrity of the disc. On top of this there is a reflective film, and this is the layer on which data are recorded. The third layer is a protective coating to prevent the reflective layer from any physical damage. Data recording is achieved by making very tiny depressions on the reflective layer. These depressions may represent "O"s. Once the recording is over, the surface of the reflective layer of a CD-ROM will consist of a number of depressions, and areas with no depressions — commonly known as "pits" and "lands". Due to reasons associated with modulating and error correction techniques, "O"s and "I"s are in practice not represented by "pits" and "lands". Instead a transition from a "pit" to a "land" or from a "land" to a "pit" denotes a "1" and the length between transitions, whether it is a "pit" or a "land", represents the number of "O"s. The "pits" are created by highly focussed monochromatic laser beams powerful enough to cause depression on the reflective layer. Reading the recorded information is done by using another less powerful but highly focussed monochromatic laser beam which will get reflected from the "pits" and "lands". The laser beam that is used for reading does not create any "pits" on the CD-ROM surface. It merely detects them. Fig. 1 illustrates the recording on an optical disc.

In the case of most optical discs two glass substrates are placed back to back with a thin

*Based on paper presented at the Tenth Annual Convention and Conference of the Society for Information Science, Trivandrum. January 1991

layer of tellurium alloy in between. The two glass substrates with a thin layer of tellurium alloy inside are firmly held by an outer and inner metal ring. Before the recording is done a very shallow continuous spiral groove of uniform depth is made into the tellurium alloy coating by using highly focussed monochromatic laser beams. Instead of having spiral grooves, some optical discs have the grooves in concentric circles. Developments in sophisticated optics and servomechanism have made it possible to have these grooves separated from each other by a gap as narrow as 1.6 microns. In order to record information, "pits" are melted into these grooves by a laser beam of fluctuating intensity. The depth of each "pit" is about 0.1 micron and its width is only 0.6 micron. With a pitch of 1.6 microns between the tracks and with a width of 0.6 micron for the pits, the density of recording that can be achieved is about a million bits per square mm. While reading the optical disc, the reflected light distinguishes between the "pits" and the "lands", and gets the information recorded on the disc into the original "O"s and "1"s. Once the recorded information is read and converted into "O"s and "1"s, there is hardly any difference between information recorded and read from a magnetic media and from an optical disc.

Production of CD-ROM

The process of production of a CD-ROM is similar to the method used in the production of musical records. The first step is to store the data on a magnetic tape either by "keying-in", or by optical scanning of texts and using OCR (optical character recognition) equipment, or by optical scanning and digitising the image. In the first two methods information is stored character by character, while in scanning and digitising the image, information is stored as facsimile in the form of images. Most of the CD-ROMs containing databases or encyclopaedia use information stride as characters. The structured data with special identifying codes are recorded on a magnetic tape. These special codes are later used when data must be selected and read by the CD-ROM drive. The magnetic tape, with the formatted database stored on it, is sent to a "Mastering plant". In the Mastering plant, the database is written on a glass "master" by a laser beam. The laser beam burns microscopic pits representing data into the surface of the Master. The master becomes the original from which CD-ROMs are mass produced. Using master, through mirror image inversion, a "Stamper" is created which is used in replication of the injection moulded disc. Preparing the "Master" and the "Stamper" are the most complex and expensive operations in the production of CD-ROM. Since no correction can be introduced in the CD-ROM, thorough checking of the data before the master is prepared is very essential. Preparing a master, reportedly, costs about $ 2,000 to $ 50,000. The cost of the final CD-ROM largely depends on how many copies are made from each Master. If the total number of copies made from one Master is about 1000, the cost of a CD-ROM should be around $ 5 to $ 50, depending on the cost of "Mastering".

CD-ROM Equipment

The universally followed procedure to read information from CD-ROM is to use a CD-ROM disc drive, which is more commonly known as a CD-ROM player, connected to a personal computer of the standard configuration that is being widely used now, with atleast 640 MB memory, one floppy drive, one winchester disc along with a printer. There should be an interface card to connect the CD-ROM player to the computer. The CD-ROM player with an IBM PC/AT cost a little over Rs. 120,000.

A prototype CD-ROM drive was demonstrated by Philips in November 1984. The standard for CD-ROM was agreed upon by Sony and Philips and came to be known as the "Yellow Book". The specified size of 12 cm is easily accommodated in the $5\frac{1}{4}$" size provided for floppy discs in personal computers.

The yellow Book specifies the physical layout of data on the disc, ECC and encoding. It does not lay down a standard for a logical file structure or directory format. In September 1985, a group of 13 companies met at the High Seirra Casino Lake Tahoe in Nevada. The High Seirra Group agreed upon logical file and directory structures for CD-ROM. After some minor modifications and enhancements, the HSG proposal was adopted by ISO in late 1987. For all practical purposes, the final standard ISO-9660 is identical to the original High Seirra Group proposal.

The organisation of files on a CD-ROM is similar to the tree structure used by DOS and UNIX for file directories. However, unlike in the case of magnetic discs, the High Seirra proposal provided for a table giving the physical location of each file on the CD-ROM. The path table is read and stored in the RAM before the use of a CD-

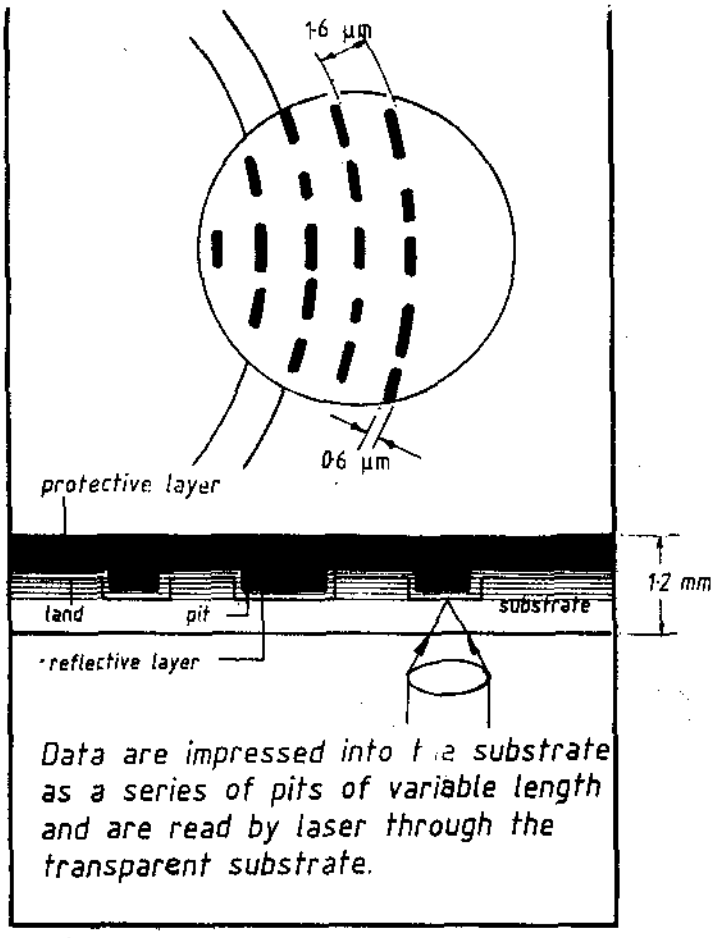


Fig. 2 ILLUSTRATION OF OPTICAL RECORDING

Fig. 1 Illustration of Optical Recording

ROM is initiated. The path table in a CD-ROM obviates the need to follow the path tree to read any file. The operating system DOS, as it exists now, is not capable for handling CD-ROM. Hence, an extension of DOS, called MSCDEX, is loaded to the operating system as a part of installing the CD-ROM drive to a PC/XT or PC/AT. The installation of MSCDEX and the CD-ROM drive is quite simple, and can be done without any external assistance.

Conclusions

The ease with which information stored in a computer peripheral medium can be selectively recalled and the enormous amount of data that can be stored on an optical disc, whether it is the 12 cm CD-ROM or the 12" optical disc, make a computer based image and information storage system very attractive. The computer system that is needed to retrieve information from optical discs is rapidly becoming less and less expensive but the cost of telecommunication does not seem to fall at the same rate as the cost of computer systems. Besides, the availablity and reliability of telecommunication systems in many parts of the world are not quite as satisfactory as one would wish. Hence, stand-alone optical disc based systems are bound to be more attractive than large centralised computers with databases that can be accesed from many parts of the world. Such a centralised system was indeed more attractive when the cost of storing the database and the cost of computer were rather high. With increased use of optical discs and pre-recorded CD-ROMs, the cost of these discs and of CD-ROMs containing databases or encyclopaedeae or handbooks is bound to go down further and consequently their use also will rapidly go up.

Management of Data COMAD 90

The Indian National Scientific Documentation Centre organised an International Conference on Management of Data (COMAD 90) during December 12-14, 1990 at New Delhi. The conference was preceded by two-day tutorials (December 10-11) to upgrade prior knowledge and provide valuable time and money-saving insights into data management techniques common to many information systems. Covering new data models, entity relationships and object-oriented databases, the tutorials were greatly appreciated by the participants.

Inauguration

Shri T.N Seshan, presently Chief Election Commissioner of India, then Member, Planning Commission, inaugurated the conference. He emphasised the importance of data management and quoted a number of examples where proper data had not been available for decision making or for planning purposes at the national level. He stressed the need for evolving data management techniques that would make the access of meaningful data easier to the user. He sggested that in the next year, COMAD should concentrate on making data management techniques more user-friendly.

Prof. T. Viswanathan, Director, INSDOC and Conference Chairman in his welcome address brought out the importance of data management in the context of present information explosion. He traced the genesis of this conference to the interest shown by a few professionals in India foreseeing the importance of data management in coming years. He pointed out that the conference was focusing on data management techniques that are likely to become available a few years from now. Reviewing the performance of various database management systems (DBMS) being employed at present, he asserted that in the wake of very large data to be handled, need is already being felt to look for the new database organisation techniques such as object-oriented databases, etc.

Dr. N. Seshagiri, Director-General, National Informatics Centre (NIC), Delivered the keynote address. He emphasised the need for decentralized management and to evolve distributed or federated systems which would cooperate with each other over a network. In this regard he underlined the role of computer communication networks. Talking about General Information Systems (GIS) being developed by NIC, he mentioned that there are two lines of research being pursued in India. One in which a tool box approach is taken for data management and the other in which a hybrid approach combining scheme structure with tool context is used. The former appraoch is being pursued by the Department of Space, Bangalore, National Remote Sensing Agency, Hyderabad and Space Application Centre, Ahmedabad. The latter approach is pursued by NIC.

Panel Discussion

The conference was attended by 75 delegates including foreign delegates from USA, Sweden, Japan, Switzerland, France and Italy. A total of 62 papers were received. These were reviewed by a programme Committee of 28 persons (21 from abroad). Finally, 19 papers were accepted for presentation covering various aspects of data management including query systems, fussy systems, specialized databases, etc. The accepted papers — 7 from India and 12 from abroad were printed in the proceedings of the conference.

An interesting feature of the conference was the panel discusison on the last day (December 14) on the theme "Data Management: The Next Decade". The panelists included Shri N Vittal, Secretary, Department of Electronics (Chairman), Dr. P.P. Gupta, Chairman & Managing Director, CMC Ltd., Dr. S.S. Murthy, Director, Defence Scientific Information & Documentation Centre (DESIDOC), Prof. B.N. Jain IIT, Delhi, Prof, C. Rolland, University of Paris, France and Prof. T. Viswanathan, Director, INSDOC. Other participants included eminent persons from government, industry and academic circles. Many problem areas in data management and solutions feasible were discussed. The panelists suggested that the ultimate aim should be to develop user-friendly interfaces for establishing the acceptability of data management techniques.

Marketing of Information Products — IPE Study

The Institute of Public Enterprise, Hyderabad recently conducted a study on marketing of information products and services by libraries and information centres. The study was commissioned by NISSAT in the Department of Scientific & Industrial Research, New Delhi.

The study Report, published recently, notes that most librarians and information professionals are not familiar with the contemporary approach to marketing. They do not believe that they have to market their resources and services. However, atleast in a few centres, there is an effort to market the products and services, but the main thrust appears to be on selling them. The performance of these centres assessed on the basis of the total volume of sales. Except in very few cases even the sales data are not available. Further, the information centres which form part of larger organisations do not have the much needed marketing orientation.

The annual budgets of the information facilities put together form only 1.0 to 1.5 per cent of our R&D budget. However, the total investment that has gone into these facilities over the last few decades is very substantial. The importance of this sector becomes very clear when we look at the need for the massive investment required in the coming years on account of a variety of reasons including the enormous growth of S&T information, increasing cost of journals as well as books, new information technologies and above all increasing operational costs. Hence the report reccommends series of actions to bring about a radical change in the philosophy and approach to the provision for information products and services.

The main recommendation is that the NISSAT should take a long term view of the management systems and practices and take appropriate steps to bring about the desired changes. In specific terms, the study recommends that:

1) NISSAT should sponsor and support short duration management courses for the benefit of librarians and heads of information centres. These courses should focus on marketing management.

2) Nissat may also take steps to develop suitable guidelines for marketing of information facilities, products and services which will be suitable to the Indian conditions.

3) Another important step to be taken is that NISSAT should develop a set of guidelines for evaluating the performance of libraries and information centres.

4) The heads of libraries and information centres may be asked to develop suitable marketing plans on an annual basis. Implementation of the plans may be supported by suitable funding. To start with this programme may be considered for at least a few selected libraries and information centres.

5) Further, any future investment in libraries and information centres should have a marketing component. While approving funds for information materials and technologies, suitable allocations should also be made for marketing activities.

6) Benefits of marketing approach and studies should be given wide publicity. To start with, NISSAT Newsletter could serve as a medium for communication. Later, successful case studies on marketing may be compiled and published for reference.

7) NISSAT may encourage and support an annual conference of heads of libraries and information centres with a view to reviewing their performance.

8) Perhaps it is also appropriate if the library schools and the open universities are encouraged to launch a post graduate course on management of libraries and information centres.

The report points to the fact that NISSAT has been a pace setter in the past and a source of inspiration for the information professionals. In this context it will be appropriate if NISSAT accepts the above recommendations and initiate appropriate action to improve the image and profitability of the information centres.

Management Information System for Agricultural Research — International Workshop

In order to provide an opportunity for the research managers in the South Asian countries to gain insight into the development and use of an organised Management Information System (MIS) for agricultural research, the National Academy of Agricultural Research Management (NAARM) organised, in collaboration with the International Service for National Agricultural Research (ISNAR), Netherlands, a two week International Workshop on MIS for Agricultural Research at NAARM, Hyderabad from 17 to 29 September 1990. The workshop was supported by the Asian Development Bank (ADB).

Objectives

The workshop's main objective was to develop and evaluate new approaches to organising and using good information for agricultural research management. The major emphasis was on specific MIS development problems and practical solutions.

The event was attended by 41 research managers from six South Asian countries, namely, Bangladesh, Peoples' Republic of China, Nepal, India, Pakistan and Sri Lanka. This includes participants from NAARM, ISNAR and ADB The participants were essentially managers who either use information for decision-making or produce and organise information for such decision-makers.

Proceedings

The Workshop was inaugurated on 17 Sept. 1990 at NAARM in Hyderabad. While speaking on the occasion, Dr. Byron Mook from ISNAR, Dr. K.V. Raman from NAARM and Dr. Muhammad Mannan from ADB emphasized the need for an organized information system to manage the resources in the developing country research systems more efficiently and effectively. The guidelines prepared by ISNAR on Project Budgeting System (PBS) and MIS formed the basis for discussion in the Workshop. The participants had a lot of 'hands-on' experience by working with computers using the software 'REFLEX'.

In the plenary session, the participants were introduced to concepts like project budgeting system, database management and human resources management, after which they actually practised various aspects of these concepts in the computer laboratory. After familiarising with basic concepts and the computer use, the participants worked on a project for developing PBS/MIS. They were made into groups of three and asked to develop an MIS using the Ghosa project case study. The MIS developed by the individual groups were presented and evaluated. The hands-on experience with the computers gave the participants lot of confidence to develop and use MIS for agricultural research.

The guidelines prepared by ISNAR on PBS/MIS were discussed by different Panels comprising scientists from different countries Several usetul comments and suggestions were made. Participants from individual countries met in groups and finalised the status paper prepared by ISNAR, high lighting the MIS currently under operation in their respective countries. Towards the end of the Workshop, specific action plans for introducing the MIS in their respective countries were prepared by the participants. The individual action plans were presented and finalised in the Workshop.

Tenth SIS Convention, Trivandrum

The Tenth Annual Convention of the Society for Information Science got under way at the Regional Research Laboratory (RRL), CSIR, Trivandrum on 17 January 1991 amidst reports of the outbreak of War in the Persian Gulf — the first major war of the computer age. As expected the first casualty, like in any war, was information — reliable, credible and factual information while communications dwindled to a minor concern.

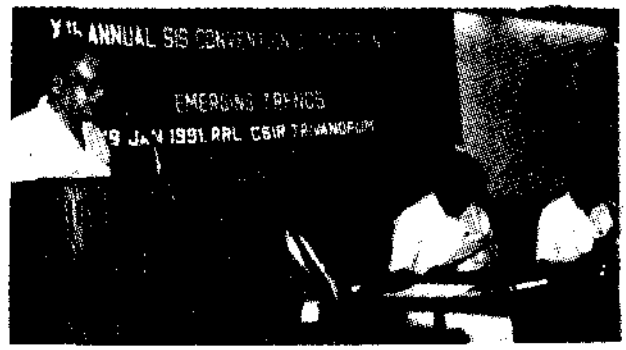
Not for the Convention, however, where it was indeed the major concern, the theme itself being 'Emerging Trends of S&T Information Systems and Services'. Extensive and intensive discussions by over a hundred library and information experts and professionals went on for three days through 19 January to provide a glimpse of what has been happening in the country and of the developments in the future.

Inauguration

The convention was inaugurated by Shri K. Chandrasekharan, Minister of Education and Law, Government of Kerala. The Minister welcomed the decision of SIS to hold the convention in Kerala. The conference, he felt, would create an awareness about the current status of information systems, their potential and promise, identify gaps in so far as states like Kerala were concerned and integrate the efforts of different institutions and agencies.

The Minister emphasized the need for making information available to researchers speedily and in a cost-effective manner. He called upon all agencies concerned with generation, communication and use of S&T information to put in their best efforts to computerize the systems as speedily as possible so that India does not lag behind other countries in this respect. In so far as Kerala was concerned, he assured full support of the State Government in these endeavours.

Earlier, welcoming the delegates and guests at the inaugural function, the Director RRL, Dr A.D. Damodaran said that researchers were primarily interested in modernising libraries as a quick and comprehensive source of information in support of the research programmes. This meant



SIS Secretary P.C. Bose welcomes Chief Guest and the delegates

ultimately the facility on a terminal to retrieve the relevant literature from all databases available nationally and also internationally. Obviously the use of computer based data system and networking formed the key to modernisation of the library from this point of view.

In this connection. Dr Damodaran recalled with great interest what he saw in 1976 in the Information Division of the celebrated Oakridge Laboratory, USA which perhaps was one of the pioneers in creating research data bases of published literature based on a key-word concept. A serious effort had been initiated in RRL during the past 3-4 years to introduce such a concept in the library. In selected cases services of private agencies had been used for on-line search. Recently RRL library had been connected to the SIRNET Electronic Mail System. The idea was to develop this terminal as an entry point for national and international published literature as early as possible.

Dr Damodaran added that CSIR had been playing a very crucial and significant role in promoting basic research through its extramural research programme. To an extent perhaps INSDOC activities also can be treated as an allied activity. It is in this connection that RRL proposed to make use of the SIRNET system to make this data retrieval facility available to all serious research students and scientists in Kerala State for which he requested the State Minister of Education to join CSIR-RRL as a partner on a 50-50 basis. In this connection, Dr Damodaran noted

1. Shri I.R. Kumar (NRDC) is awarded SIS Fellowship by Shri K. Chandrasekharan as Shri S. Nagarajan applauds

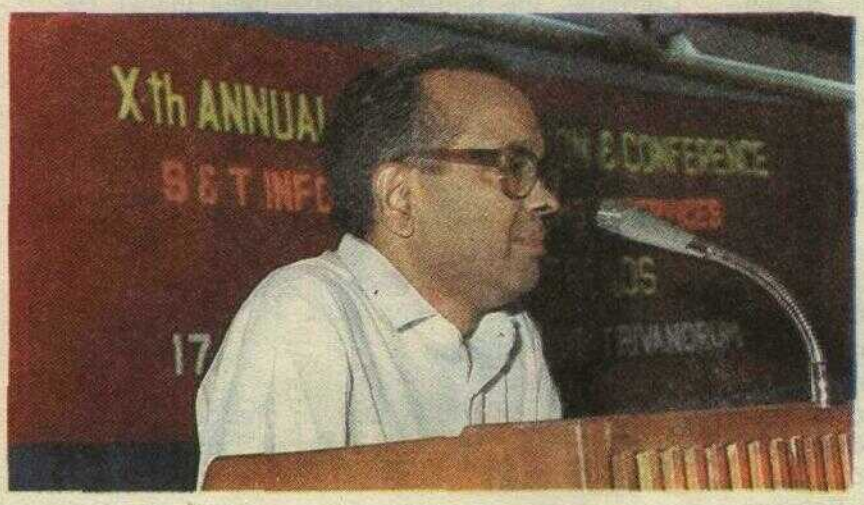
2. Raizada Memorial Award for Young Scientists (1989) is received by Shri Subhash Deshmukh (National Council of Cement and Building Materials)

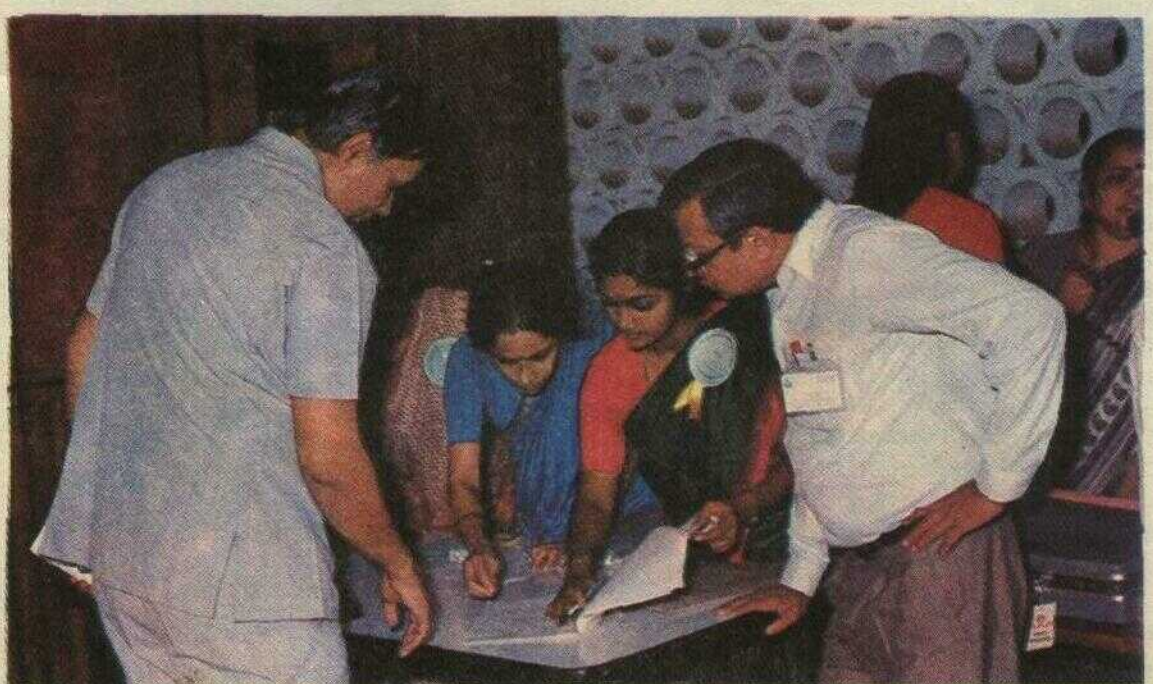
3. A section of the audience

4. Raizada Memorial Award (1990) to Shri Som Datt (ICAR)

5. Dr A.D. Damodaran, Director RRL, Trivandrum addressing the inaugural function

6. Lighting the inaugural lamp is Shri K. *Chandrasekharan*, Minister of Education and Law, Govt. of Kerala as Dr Damodaran applauds





7. At the Registration Desk, Dr K. Subramanian (NIC) and Shri H.C. Jain (PID)

that RRL library and researches were being used by a number of students belonging to the various national institutions in the State. He expressed the hope that with the help and encouragement of the State Government, this facility would be further strengthened and it would be possible in the near future to integrate the system with on-line search facilities.

Shri S. Nagarajan, President of SIS in his introductory remarks gave a resumé of the activities and programmes of the Society in the last decade and drew attention to the tasks that lay ahead. He lamented that information scene in India had yet to make an impact on the planning and development process. Of the total budget for scientific research in CSIR, only 3-4 per cent was allotted to information facility. The annual expenditure at current level for providing information services at different S&T information centres was Rs 20-30 crores or about 1-1.5 per cent of the national R & D budget. In contrast, in advanced countries nearly 25 per cent of the GNP is spent on information activities.

Award of Fellowships

Two Fellowship Awards were given for 1990 by the Chief Guest, Shri. K. Chandrasekharan. In keeping with established practice, the awards are given by SIS annually for outstanding work in information science and technology. Each award carries a scroll and a silver medallion and confers on the awardee Life Membership of the Society. So far 25 Fellows have been thus honoured.

The 1990 Fellows are:

1) Shri P.N. Sharma, Head, Library and Information Services, Thapar Corporate R & D Centre, Patiala.

2) Shri I.R. Kumar, Dy. Manager (Informatics), NRDC, New Delhi.

The Raizada Memorial awards to young scientists for 1989 and 1990 for contributions to the cause of dissemination of S&T information were also given away on the occasion for the first time. The winners are:

1) Shri Subhash Deshmukh, National Council for Cement and Building Materials, New Delhi.

2) Shri Som Datt, ICAR, Krishi Anusandhan Bhawan, New Delhi.

Proposing a vote of thanks, Shri P.C. Bose, Secretary SIS, thanked the Director RRL, Dr A.D. Damodaran for hosting the SIS convention, the first in Kerala, and extending all possible facilities for smooth conduct of business. He thanked the Chief Guest for kindly gracing the occasion to inaugurate the conference and for his encouraging response to the plea for strengthening the information facilities in the state. To the local Reception Committee which had Shri K.P. Sadasivam as Convener, the Society owed grateful thanks for excellent organization and management of the Conference through its various subcommittees for transport, accommodation, hospitality, etc. He expressed the Society's gratitude for generous financial support extended by CSIR for convening the convention and concluded by thanking the delegates who had responded so well to the Society's call, and the Chairmen and the Keynote speaker for accepting the invitations.

Preliminary Session

In the Preliminary session presided over by Dr D.S. Rane (Rapporteur Ms K. Lalithabai), Dr

SIS Fellowship Recipient Shri P.N. Sharma

M.R. Balakrishnan delivered the keynote address which dealt with Optical Storage of Information, the basic principles involved and techniques of optical recording of data. The optical discs had a much higher strorage capacity compared to magnetic discs. Dr Balakrishnan, explained the CD-ROM technology, its production, CD-ROM equipment and its suitability for use in computer systems in countries like India.

Among the other notable general presentations were those on NICNET by Dr K. Subramanian, of NIC, on NISSAT activities by Mrs S. Ravindran (DSIR), on T/FACLINE by Ms Radhika Ramnath, on various systems developed and marketed by HCL by Shri Anil Kumar of HCL, and on systems developed by WIPRO by Shri Veeraraghavan.

Technical Sessions

Twenty-five papers were presented in five technical sessions devoted to various aspects of information generation, storage, processing and retrieval.

1) **Session 1**: Parameters involved in the building up of specialized information systems (Chairman: Dr I.N. Sengupta; Rapporteur: Shri S.N. Mehta)

2) **Session 2**: Existing information systems in India — A case study (Chairman: Dr M.R. Balakrishnan; Rapporteur: Shri D. Kamala Vijayan)

3) **Session 3**: Standardized methods in relation to hardware and software (Chairman: Prof. T. Viswanathan; Rapporteur: Shri R. Kundra).

4) **Session 4**: Information services offered — processes involved and present practices (Chairman: Shri I.R. Kumar; Rapporteur: Shri V. Govindarajulu).

5) **Session 5**: Marketing of information products — Pricing factors (Chairman: Dr P.C. Shah; Rapporteur: Shri K.A. Ranganath). Visual presentations were made on the information services developed and offered in specific areas, such as Plantation Crops, Food Science & Technology, Agricultural Science, Medicinal & Aromatic Plants, Textile Industry, etc. The networking efforts being made in various sectors and organizations featured in some of the papers.

Recommendations

The major recommendations arising out of the presentations and the discussions that followed stem from the common desire to hasten the process of adoption of modern systems as speedily and effectively as possible, with due consideration for needs specific to various sectors.

The following recommendations were adopted at the valedictory session held on 19 January (Chairman: Prof. K.A. Isaac; Rapporteur General: Shri R.N. Sharma):

1) Efforts and programmes aimed at evolving, standardising and using automated systems are in progress at a large number of centres. There is obvious need for a proper stock-taking of all these, so that the knowhow already developed can be evaluated and shared. This would, in addition, help in avoiding duplication of effort. A suitable mechanism for the purpose needs to be evolved.

2) It is esential to make an inventory of the facilities available in various centres, as also to assess the requirements, both specific and general, in respect of systems, hardware, software and personnel.

3) Welcome efforts are afoot to network and integrate various systems and services. It would be in the fitness of things to evolve guidelines, norms and specifications for networking at local, regional and national levels. A high level committee needs to be set up for this purpose.

4) One major hurdle in developing capability for online access to databases among library professionals lies in making them familiar with the communication software. Organized effort in making these online users thoroughly familiar with the capabilities of commonly used communication software packages and developing in them the capability to check whetehr the trouble lies in the telephone line or the modem when online access fails, will help considerably in increasing the use of online databases by libraries.

5) Dedicated effort to take the attractive features from the retrieval software developed or available in all the major libraries and development of a software which can be used by all libraries will be necessary before the benefits of networking eforts can be realised. In the meantime information centres can make use of available software packages without prejudice to the need for a wider networking programme.

6) Side by side with efforts to evolve information systems, adequate attention needs to be paid to the development of indigenous capabilities in respect of fabrication of the basic materials. A coordinated action programme involving various concerned ministries, industrial establishments and societies needs to be worked out for the purpose on priority basis.

7) An issue specific to countries like India is that the systems evolved must not only be cost-effective, but also capable of catering to the requirements of a multi-lingual clientele. Provision for the latter must necessarily form an essential component of policies and programmes formulated.

8) Building up of bibliographic databases has todate remained relatively neglected. Due attention needs to be paid to this aspect.

9) Standardization of classification systems, practices, formats, etc. needs to be taken up at national level with involvement of all interest groups concerned with development of information systems.

10) The Government of India is urged to finalize the formulation of a National Information Policy which has been on the anvil for quite some time. The Policy evolved should have adequate provision for legislative measures pertaining to matters like authenticity, secrecy, ownership and copyright.

11) With fast changeover to automated systems, due attention needs to be paid to appropriate user studies and user education programmes in respect of these systems. While taking note of the ongoing efforts by NISSAT, INSDOC, DESIDOC, DRTC, etc. to organize training facilities for library and information service professionals for management of computerized information systems and services, the conference feels that these facilities need to be considerably augmented to meet the ever-increasing manpower requirements in this area. In this task NISSAT and its sectoral centres should play an increasing role by expanding and upgrading the existing facilities.

12) To effectively serve its purpose, information must be communicated to the end-uers. To achieve this it is important that packaging of the information commodity for effective communication should be in line with the users' level and background in terms of language and presentation. This needs acquisition of certain essential communication skills and capabilities. NISSAT and other agencies are, therefore, urged to extend support in a big way for organizing training facilities directed at upgrading communication skills of library and information science professionals.

13) It is important to undertake cost-benefit analyses of use of automated systems *vis-a-vis* manual systems.

14) Large libraries having machine read able databases on book catalogues stand to gain if they exchange these databases with one another.

15) Bodies like the SIS should take steps to catalyse extended 'computer literacy' among the youth and the non-white collar workforce with the aim of creating awareness about the role of information technology in improving the quality of life.

16) Databases need to be built up on ecological/ environmental topics, land use patterns and other similar themes of importance to the common man.

Ram D. Taneja
R.N. Sharma

NISSAT-INSDOC Courses on Computer Applications to Library & Information Activities 1991-92

In collaboration with NISSAT, INSDOC has been organizing short-term courses in computer application to library and information activities covering a number of packages like CDS/ISIS, dBASE III Plus, Lotus 1-2-3, Wordstar. During 1991-92 eight more short-term courses the details of which are given below, are being arranged.

1. Computer Application to Library & Information Activities (for freshers).

   Course Content

   The course comprises MSDOS, CDS/ISIS, dBASE, Wordstar, Lotus 1-2-3 and theoretical classes on Microcomputer hardware, files and database organisation, computerised information retrieval, common communication format, etc.

   Duration : 15 April to 10 May 1991 (4-week)

   Seats : 15 (Not available).

2. CDS/ISIS (Ver. 2.3) with PASCAL Interface (for those having exposure to CDS/ISIS (Ver. 1.0).

   Course Content

   The course comprises all the facets of CDS/ISIS (Ver. 2.3), programming through PASCAL and its application in the CDS/ISIS (Ver. 2.3) environment. Emphasis is provided on the creation of databases relating to various library & information activities and generation of computerised products like accession list, author index, subject index, library catalogue, directories of various kinds and so on.

   Duration : 8 July to 2 August 1991 (4-week)

   Seats : 15 (Available).

3. Computer Application to Library & Information Activities (for freshers).

   Course Content : As in Sr. No.1.

   Duration : 19 August to 20 September 1991 (5-week)

   Seats : 15 (Available).

4. Bibliometrics

   Course Content

   Bibliometrics: definition, scope, limitations; Mathematical bibliometrics; Bibliometric laws; Bibliometric tools; Application of bibliometric methods for generating various indicators including science indicators; Indian contributions in bibliometrics; Computerised searching of Science Citation Index in CD ROM.

   The last two days of the course will be devoted to presentation of papers by the participants and discussion of the bibliometric problems on which the participants are working.

   Duration : 30 September to 12 October 1991 (2-week)

   Seats : 15 (Available).

5. Computer Application to Library & Information Activities (for freshers).

   Course Content : As in Sr. No. 1.

   Duration : 11 November to 13 December 1991 (5-week)

   Seats : 15 (Available).

6. DBMS and dBASE

   Course Content

   The course consists of both theoretical and practical classes and covers the following: Basics of database management systems, with examples of relational database management systems, dBASE III Plus and their library applications in acquisition, processing, circulation control & the salient features of dBASE IV.

Duration : 30 December 1991 to 24 January 1992 (4-week)

Seats : 15 (Available).

7. Recent Development in Information Science & Technology (Refresher course for working librarians).

Course Content

Indexing, abstracting and thesaurus construction. Technical writing, Bibliographic formats. ISBD, ISO 2709, CCF & UNIMARC.

Bibliometrics & Informetrics
Computer Application to Library & Information Activities
Computer communication networks
Computerised databases and on-line searching
CD ROM databases & on-line searching
Electronic Mail
Desktop Publishing
Reprographics
Teletex, Videotex, etc.

The course comprises lectures and demonstrations.

Duration : 4 February to 14 February 1992 (2-week)

Seats : 15 (Available).

8. Computer Application to Library & Information Activities (for freshers).

Course Content : As in Sr. No. 1.

Duration : 2 March to 4 April 1992 (5-week)

Seats : 15 (Available).

- Seats will be filled up on first-come-first served basis.
- **Course fees :**

5 week course	Rs. 3,200/- (with accommodation) Rs. 2,500/- (without accommodation) US $ 1,600/- (with accommodation) {for foreigners}
4 week course	Rs. 2,500/- (with accommodation) Rs. 2,000/- (without accommodation) US $ 1,250/- (with accommodation) {for foreigners}
2 week course	Rs. 1,250/- (with accommodation) Rs. 1,000/- (without accommodation) US $ 650/- (with accommodation) {for foreigners}
1 week course	Rs. 650/- (with accommodation) Rs. 500/- (without accommodation) US $ 350/- (with accommodation) {for foreigners}

Course fees are to be sent in advance in the form of cheque or demand draft payable to **Director, INSDOC, New Delhi.**

Refund of Course Fees: (1) If the intimation regarding cancellation of admission is received before one month from the date of commencement of the course, the course fees may be refunded after a deduction of 10% of the total amount of the fees. (2) If the intimation regarding cancellation is received within one month from the date of commencement of the course the fees will be refunded after deduction of 20% of the total amount of the course fees. (3) No refund will be made if no intimation is received before the date of commencement of the course.

Eligibility: The courses are exclusively meant for library and information professionals. Persons working in libraries/information centres and having library science/computer science qualification are eligible to apply. Fresh candidates having post-graduate degree in library and/or information science are also eligible to apply.

How to Apply : Application are to be made in prescribed form available on request.

Contact : Shri B.K. Sen, Deputy Head, Education & Training Division, INSDOC, 14, Satsang Vihar Marg, New Delhi 110 067. Phone: Direct – 6863521, PABX – 660141, 660143/Extn. 223, Telex: IND 2499.

News and Events

Networking of Libraries and Information Centres in Pune: MACS Seminar

Senior representatives of prominent educational and research institutions in and around Pune are exploring the possibilities of establishing a computerised library network in the city.

Such networking, which is already being set up in Delhi (DELNET) and Calcutta (CALIBNET), would greatly help in locating the availability of and obtaining the required information. It would eventually form part of a University Grants Commission, initiated national hook-up among all universities and 200 important research institutions.

Among those who participated in a recent day-long seminar on "Networking of libraries and information centres in Pune — Need and solutions", were the noted astrophysicist, Dr Jayant Narlikar, Maharashtra Association for the Cultivation of Science (MACS) director, Dr. A.D. Agate, the Mahratta Chamber of Commerce and Industries (MCCI) Secretary, Dr. B.R. Sabade, Dr S.G. Mahajan, chief librarian, university of Poona and head of the library sciences department, Shri R.P. Hans, DGM, Pune Telecom and Shri R. S. Singh, Area Coordinator NICHEM, NCL, Pune.

The convener of the seminar, Shri S.N. Kulkarni, chief librarian, MACS informed the gathering that a survey recently conducted revealed that there were 38 major libraries in Pune of which 19 had computer facilities.

Five libraries were planning to instal computers within three months to a year's time. Of the 16 libraries using computers effectively, two claimed to have fully computerised facilities while the remaining were partly computerised. Of the 177 library personnel in various libraries, 57 were acquainted with the use of computers while 50 others were keen to learn.

It was also noted that six libraries in the city had access to international data banks.

With this background, Pune had a promising future and was ideally suited for introducing library networking, Shri Kulkarni said. He, however, added that before this could be achieved, a number of hurdles would have to be overcome such as the inability of some libraries to go in for expensive software.

In his welcome address, Dr A.D. Agate, director, MACS, said that the information explosion, scattering of all types of information and the language barrier posed serious problems to a researcher, student or a scholar interested in obtaining the required information.

The volume of information was increasing at the rate of 13 per cent per annum; virtually doubling every seven years. In such a situation, no single library could hope to be self-sufficient. Neverthless, given the advances in digital computers and telecommunications, and by introducing library networking, these hurdles could be overcome, he said.

Dr Agate referred to OCLC, USA and the library networks in the country, such as those in Delhi, Calcutta and of the Defence Research and Development Organisation.

He said the University of Poona's Jayakar Library had been assigned a pilot study to explore the possibilities of establishing library network in the city.

Dr A.B. Joshi, agricultural scientist and vice-president, MACS said Pune was fast becoming an important scientific centre in the country and therefore it was important that a system such as library network should be made available to the researchers here.

Speaking on 'Scientific libraries from a user's point of view', Dr Jayant Narlikar, director, Inter-University Centre for Astronomy and Astrophysics (IUCAA), observed that library facilities are essentially used by students, teachers, researchers, authors, reviewers and non-specialists.

An ideal library should be able to cater to the varying needs of these different types of users. While the human and personal touch always helps, today one cannot do without automation, Dr Narlikar said, starting that automation has several advantages and far outweighs the manual efforts at data storage.

A steering committee to formulate the proposal for conducting a feasibility study on the subject has been formed.

Computer Applications to Lib & Info Work — DRTC–NISSAT Course

DRTC Bangalore conducted a short-term (six-week) course on Library and Information Work during 16 Jan-26 Feb. 1991 at Bangalore.

The objective of the course, sponsored by National Information System for Science and Technology (NISSAT) was to provide an opportunity to persons qualified for performing technical and housekeeping activities in an information system or centre, the necessary profession at knowledge and skills specially in using computers to render information services in libraries and other kinds of information service systems. The emphasis was on skills essentially required for designing, developing, organizing, operating, controlling and evaluating computerised systems for secondary information work and service. Knowledge of systems analysis, computer service, programming, use of software of proven capability and planning and management of computerised information systems was imparted to the participants.

The next course on similar lines is scheduled to be held during July-August 1991.

AGLIS National Convention

The Association of Government Librarians and Information Specialists (AGLIS) held its National Convention and Seminar during 20-21 Dec. 1990 at New Delhi. The Central theme was computerisation of government libraries and information centres: Progress and prospects.

The convention was inaugurated by the Dy. Minister of External Affairs and Finance, Shri Digvijay Singh. About 100 professionals participated and 27 papers were presented in three technical sessions:

1. State of Art in Computerisation
2. Computerisation Programmes in Govt. Libraries and Information Centres.
3. Problems in Implementation

The concluding session drafted and adopted the recommendations emerging from the deliberations. The Session Chairman were Dr S.S. Murthy Director DESIDOC, Prof T. Viswanathan, Director INSDOC, Shri Harjit Singh, Adviser Environment & Forests, Prof J.L. Sardana and Prof. A.P Srivastava of Delhi University.

During the sessions, demonstration of LibSys and LIBINFO, the library software packages was given by the respective companies.

The Convention made the following recommendations.

1. In order to acceleration the pace of computerisation in Govt libraries, each library in the Govt departments and public undertakings should be provided with suitable hardware and software free of cost.
2. Databases should be developed through appropriate departments/agencies in major subject areas. These should be made accessible to the concerned libraries through networking.
3. Government should formulate a National Policy on Library and Information Science through a Central Act.
4. Library and Information Science syllabi of the university courses should include a special paper on computer applications with adequate emphasis on practical aspects.
5. Government should set up an appropriate agency to formulate standards and norms for various aspects of computerisation. Such an agency should work in close collaboration with AGLIS.
6. Government should sponsor/finance research projects in the field of computer applications in library and information work through NISSAT, UGC, DOE and other similar agencies.
7. AGLIS should further pursue the matter on pay structure of Central Govt library staff announced by the Govt with appropriate authorities.

Shri V.K Rangra, President, AGLIS was Director of the Seminar. Shri Ambrish Kumar and Dr Pandey, were Organising Secretary and Rapporteur General respectively.

UNDP Consultancy Services for SSI

Small and medium private sector enterprises in India can avail themselves of the free consultancy services of the United nations International Short Term Advisory Resources (UNISTAR) in a wide range of fields, which includes information technology also.

UNISTAR is a unique programme designed to aid the private sector in developing countries. It arranges short-term missions abroad by leading international experts and managers for sorting out problems hindering enterprises.

The technical and administrative services provided range from engineering, product development, industrial design, manufacturing, marketing and quality control to business management, accounting and financial structuring. The services are distinct from industrial management consultancy. Furthermore, the UNISTAR programme does not charge any fee for its services except travel, accommodation and living expenses incurred during the assignment, which can be paid in local currency.

Apart from helping business people or investors who need specialised assistance in their day-to-day operation and advice on expanding their operations, UNISTAR can provide a broader range of help for the entire industry to maximise its output. Such services would be valid for the existing units, new enterprises and jointly ventured ones.

UNISTAR's consultants, according to reliable sources, are eminently qualified professionals from developed countries with a proven track record in the field.

CD-ROM Demonstration: American Center Library

The American Centre Library, New Delhi organized a demonstration and discussion of its various reference materials on CD-ROM on January 10, 1991.

CD-ROM disk, it was explained, can store 2,70,000 pages of text or 550 million bytes of user data or 15,000 pages of computer graphics on a $5\frac{1}{4}$ inch disk. Several print-based publishers have now produced a significant number of reference works on disks. The American Center Library has acquired several such titles on CD-ROM. The objective was to alert the local librarians and information scientists to usage of these specific and unique American reference resources, such as the "Facts on File", "Readers Guide to Periodical Literature", "USIA's Public Diplomacy Query" and the "International Drug Library", "Books in Print", etc. American Center visitors may use the IDL disk to search for data on almost any aspect of illegal drugs-production, trafficking, interdiction and law enforcement, as well as prevention and rehabilitation.

The library was able to successfully share with professional librarians and information scientists its ongoing commitment to explore and use new developments in electronic information retrieval, storage and delivery. The invited audience, around 25, included persons from the local universities, Government of India ministries and a few special libraries, such as INSDOC, Publications and Information Directorate (CSIR), NISSAT and DESIDOC.

Library and Info Services in Astronomy and Astrophysics

The form for Resource Sharing in Astronomy and Astrophysics (FORSA) organised a workshop on Information Services in Astronomy and Astrophysics at PRL Ahmedabad. The occasion was the 14th meeting of the Astronomical Society of India held during 29-31 January 1991.

The main objective of the workshop was to discuss collaborative resource sharing projects and to ascertain the services and products needed by astronomers. Participants from Indian Institute of Astrophysics, Bangalore; Inter-University Centre for Astronomy and Astrophysics, Pune; PRL Ahmedabad; Radio Astronomy Centre, Ooty; Raman Research Institute, Bangalore; and TIFR, Bombay attended the workshop

Following the presentations made at the joint Session, the following points emerged as a result of the discussion:

1. All the libraries should conform to standards such as AACRII, CCF, etc., so that databases can be exchanged. As decision has been taken to follow the CCF, but since several issues are involved especially standards such as UDC, AACRII, CCF, Astronomy Thesaurus, Authority File for rendering personal names, Database Product Manual and Retrospective Conversion which require detailed discussions; it was agreed that another meeting should be held for this purpose.
2. A suggestion was made that the Librarians should communicate daily by E-Mail for day to day requirements.
3. Serious concern was voiced by several participants regarding the meagre resources available in the University libraries. The astronomers working in the universities were informed that they could contact the nearest FORSA Library for their requirements.
4. It was announced that INIS & INSPEC databases are available on CD-ROM at BARC. The possibility of using these databases will have to be explored.
5. "Current Contents" is available on Floppy Disks at PRL Library. There was a discussion as to whether the floppies could be duplicated and it was clarified that it could be done only after obtaining a licence from the publishers. PRL could consider giving Current Awareness Service to a few scientists on receipt of their Interest Profiles.
6. The suggestion that FORSA News and also List of new books received on Astronomy in FORSA Libraries, be published in ASI Bulletin was welcomed by the Astronomers. It was agreed that it could be published in either Khagol (IUCAA Pub.) or ASI Bulletin.
7. The participants agreed to the proposal of preparing a "Directory of Astronomers".

Jodhpur ILA Conference

The 36th annual conference of the Indian Library Association was held at the University Campus, Jodhpur during 26-29 December 1990. More than three hundred librarians and information scientists from all over India participated. It was inaugurated by the Maharaja Gaj Singh of Jodhpur, M.P. Mr. S.C. Biswas, President, Indian Library Association presided.

The theme of the seminar held between 27 and 29 December was on "Computerization and Library Networking" The director of the seminar was Prof. M.K.R. Naidu, Librarian and Head of the Department of Library Service, SNDT University, Bombay.

Some of the resolutions adopted which have a direct bearing on the theme are:

UGC, NISSAT, etc. should be approached for funds to purchase hardware and software for libraries;

Degree courses should be restructured as Bachelor in Library Science and Computer Applications;

Library networking to be given high priority by Central and State Government agencies, UGC, NISSAT, etc;

INFLIBNET should start functioning immediately;

Network should be able to generate funds and, as far as possible, be self-sufficient.

Science Indicators for Developing Countries — Paris Conference

CNRS Paris was the prime mover behind the international conference on science indicators for developing countries held during 15-19 Oct. 1990 in Paris. This largely attended conference covered a wide area of science indicators with weightage to bibliometrics. Shri B.K. Sen (INSDOC) who attended the conference submitted a paper on Evaluation of recent scientific research output using the Impact Factor — a new technique developed for generating performance indicators of various scientific research institutions.

Conservation of Manuscripts, Books and Documents

Manuscripts, rare printed books and significant archival material constitute our most precious cultural heritage and their proper preservation is vital to protect them from further decay and damage. Such materials are housed in museums, archives, libraries, oriental research institutes and are also available with private persons. It is observed that most of them are deteriorating fast due to manifold problems that afflict them.

The Intach Indian Conservation Institute, Lucknow has launched a Project entitled, "Conservation status of Manuscripts, Books, Archival and Like Material". To begin with it is making a survey of conservation status of such items. A proforma has been prepared to collect preliminary information and the same has been sent to the several libraries, museums, archives and oriental research institute of the country of collecting the desired information. A local advisory committee consisting of eminent persons associated with libraries has also been formed to advise on the implementation of the Project. Cooperation from institutions and persons having such material is solicited. They can contact Shri O.P. Agrawal, Director General, Intach Indian Conservation Institute, A1/11, Sector B, Aliganj Scheme, Lucknow 226 020 for further details.

Bamboo Information Centre

The Bamboo Information Centre — India (BIC-India), established in July 1989 with financial support from the International Development Research Centre, Canada (DRC), is located at the Kerala Forest Research Institute (KFRI), Peechi, India, where extensive research programmes on bamboo are going on.

The BIC-ndia seeks to acquire, organize and disseminate documents and research data relevant to

bamboo research to persons involved in bamboo research and its utilization. Its specific functions are to:

1. develop and manage databases of Asian bamboo literature, scientists and current research programmes;
2. provide search services form the database and document delivery service;
3. publish a compendium on bamboos describing all the commercially important species found in India;
4. prepare a compendium on bamboos describing all the commercially important species found in India;
5. popularize research results by producing extension bulletins and slide sets; and
6. publish a directory of bamboo scientists and current research programmes.

BIC–India has been maintaining computerized databases for literature scientists and research programmes. The databases were developed using the information service software package developed by UNESCO (CDS/ISIS).

The document database called the BIC-DOC contains more than 500 items at the moment and constantly updated with new items. BIC-PROJ, the database for ongoing bamboo research projects and BIC–PER, the database for scientists contain more than 70 entries each. The databases are also updated regularly.

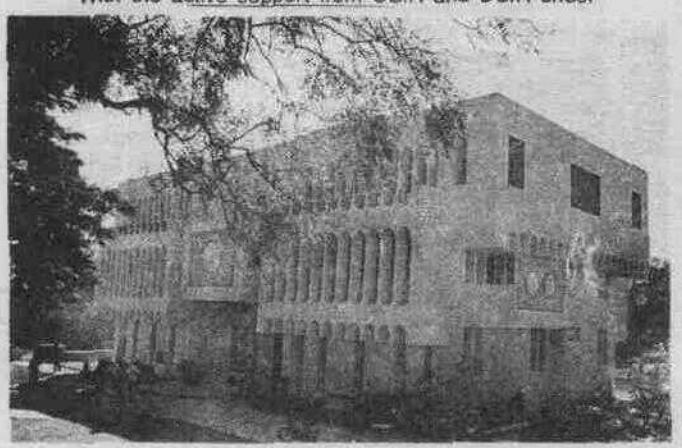
Services: BIC–India provides a wide range of services in pursuit of its objectives. These include document delivery service, question-answer service, referral service, publications and translation services.

For further details contact Mr Ravindran, Project Coordinator BIC, KFRI, Peechi, Kerala 680653.

Computerised Services at NICFOS

With the establishment of the central computer facility devoted to information retrieval at NICFOS, the Centre is now in a position to provide personalised service to individuals or organisations based on their user interest profiles. This latest service with the backing of the data-base on food science and technology covering the world literature marks a new era in the setting up the National Information Centre for Food Science and Technology.

With the active support from CSIR and DSIR under the NISSAT Programme NICFOS has, over the years, developed into a full fledged information service centre to meet the information needs of users at national and international levels in food science, technology, nutrition and allied areas through its multifaceted action programmes in library, documentation, abstracting, micrography and reprographic services. These include 'Food Technology Abstracts' (Monthly), 'Food Digest' (Quarterly), 'Food Patents' (Quarterly), 'Microform Information Service' (Quarterly); Bibliographies, Monographs, Directories and State-of-the-Art Reports. These are fully backed up by photocopying and micrographic services. The centre recently moved into its new building.



The new library building at CFTRI, Mysore which houses NICFOS

Portable CD-ROM Readers

Portable CD-ROM workstations are making their debut on the crowded optical disk stage, most notably at the CD-ROM Europe Exhibition held in London, UK last year.

Shown in an artist's impression only at the exhibition, and with no prices available as yet, was a rugged new portable "tropicalised" unit from the Belgian company, Devlonics. The unit is described as being intended for "computer unfriendly" environments. It is fitted with a low-power CD-ROM integral drive and uses a liquid crystal display screen. It comes with a removable, rechargeable battery pack. Typical power consumption is given as 12W, maximum consumption 17W. The case is waterproof and dustproof, and the whole unit weights 8 kg.

A UK firm, Comcen Technology Ltd., displayed its CD-Reader, which has an integral CD-ROM drive. The equipment is designed to give users access to databases as simply as possible for straightforward text retrieval. it uses a liquid crystal display, and can be fitted with a hard disk drive in addition to the standard floppy and CD-ROM drives —*Information Media & Technology*, Vol. 23, No. 5.

NISSAT-INSDOC Courses in 1990

Seven short term courses listed below were organised under joint auspices of the National Information System for

Course	Dates	No. of Participants
1. Computer application to library and information activities	18.12.89 to 12.1.90	13
2. Computer application to library and information activities	5.2.90 to 2.3.90	14
3. Computer application to library and information activities	2.4.90 to 27.4.90	20
4. CDS/ISIS (Ver. 2.32) & PASCAL	9.7.90 to 3.8.90	15
5. Computer application to library and information activities	20.8.90 to 14.9.90	22
6. Bibliometrics	22.10.90 to 28.10.90	12
7. DBMS & dBASE III Plus	19.11.90 to 14.12.90	18

Science and Technology (NISSAT) and the Indian National Scientific Documentation Centre (INSDOC) during 1990. These courses were conducted at INSDOC by Education & Training Division, INSDOC. Sri B.K. Sen, Deputy Head, Education & Training Division, acted as the Course Coordinator.

The faculty was chiefly drawn from INSDOC with some experts from other organisations. The response to the courses has been highly satisfactory. In order to accommodate more applicants, other courses have already been announced for 1991-92.

UGC-AMU Refresher Courses

The Academic Staff College of Aligarh Muslim University is currently conducting refresher courses in library and information science for the central and northern regions. The topics are: (i) Trends and developments in special librarianship (ii) Information management and (iii) Trends in library management. The programme concludes in March 1991. Course Coordinators: Prof. Mohd. Sabir Husain, Mr. Almuzaffar A.G. Khan and Mr. Shabahat Husain respectively. Shri P.C. Bose Head, Agricultural Research Information Centre of ICAR acted as a Resource Person and delivered lectures on (i) Bibliographic data-base: AGRIS (ii) Bibliographic data-base: CAS (iii) Organising Agriculture Library System: An Overview and (iv) Organising agriculture library system with special reference to India.

NICFOS SDI Service

A few years back a survey was conducted among users of the services of NICFOS regarding their option for selective dissemination of information (SDI) in the area of food science and technology. The survey indicated that there was need for the service. Recently this new service has been started with the installation of computer facility at NICFOS.

The Centre is now supplying specific information needed by the users on the relevant topic of their interest based on keywords supplied by them. The SDI service is provided by searching the current tapes of the FSTA database produced by the International Food Information Service. The relevant abstracts obtained based on the profile through the computer printout will be mailed regularly. There is also scope for the user to alter to profile consequent to the receipt of our prinout knowing the relevance or otherwise of the abstracts supplied. We are sending the printouts on trial basis for two months. If users find this service useful they can start subscription for regular SDI service.

Users are requested to send their profile in the prescribed form the available from Area Co-ordinator, FOSTIS, CFTRI Mysore-570 013.

Indian Science Citation Index

Considering the poor coverage of Indian S&T periodicals in the Science Citation Index (in 1988, 11 periodicals were covered out of some 700), it was decided to generate one Indian Science Citation Database at INSDOC as part of the activities of the National Centre on Bibliometrics (a NISSAT supported project). Indian papers are mostly cited by Indian Scientists. However, this particular citation picture does not get reflected in the citation scenario of the Science Citation Index. As a result, in most cases, citation scenario of Indian papers compiled on the basis of the Science Citation Index, remains incomplete. One of the major objectives of the Indian Science Citation Index is to project the complete citation scenario of the papers of Indian scientists, using both Science Citation Index and Indian Science Citation Index. The software for generating the database has already been developed and tested. In fact, two softwares have been developed — one is UNIX based and other one is MS-DOS based. In the earlier case UNIFY package has been used and the later case CDS/ISIS (Ver. 2.3) has been used.

In the first phase, such research periodicals as contain more than 80% research papers are being considered. Of course, this criterion ensures that coverage extends to all research periodicals being generated by CSIR, ICMR, DRDO & ICAR and also by important research institutes like — Indian Association for the Cultivation of Science, Indian National Science Academy and so on. The remaining periodicals will be covered in later phases. The data input has already started with the periodicals for 1990 and it is expected that by June 30 this year, more than 100 research periodicals will be covered.

Database will generate apart from the citation scenario of the papers of individual Indian scientists, source index, which will list the papers published in a year; subject index and affiliation index. It is intended to start rendering services from this database from July 1991 onwards.

TEXINCON

The National Information Centre for Textile and Allied Subjects (NICTAS) is publishing a quarterly under the above title. Each issue of TEXINCON contains:

- One lead article in a significant area written by a specialist for TEXINCON only.
- Carefully selected self contained summaries of articles, books, developments, all publications of Indian Textile Research Organisations, etc. useful to identified Indian groups of users.

Users' Groups index, Keyword index & Title index.

TEXINCON is also available on IBM-PC Compatible diskette. Subsription: Hardcopy Rs 200; Diskette Rs 450.

Inquiries to: Project Coordinator NICTAS, Third Floor, ATIRA, Ahmedabad 380 015.

Popular Science Through the Media — NCST Award for Dr Phondke

Dr B. Phondke Director PID (CSIR) and Dr R. Sreedhar shared this year's award for popularising science through the media. The awards were given on February 28, 1991 by Shri Mohan Dharia Dy. Chairman Planning Commission.

Instituted in 1988, these annual awards are given by the National Council for Science and Technology (NCST) Communication of the Department of Science and Technology.

Intergovernmental Informatics Programme (IIP)

The third session of the Intergovernmental Committee of the Intergovernmental Informatics Programme (IIP) was held in Paris, from 26 to 30 November 1990.

Representatives of 33 Committee's Member States, 41 Unesco Members States, organisations of the UN System and intergovernmental and non-governmental organisations participated in this session during which the priorities and funding of the Programme had to be examined.

The priorities of the IIP as set out by the Committe include:

- human resources for training;
- network development between academic institutions;
- research/development through software development;
- assistance in the choice of strategies and policies for the introduction of informatics for development.

The Committee further encouraged the Member States to establish national Focal Points in order to create the best conditions for the implementation of the projects.

COMNET

The Directors' Meeting of the International Network of Documentation Centres on Communication Research and Policies (COMNET) met in Nairobi, Kenya, from 4 to 6 December 1990. The meeting, organised by the African Council for Communication Education (ACCE), was chaired by Ms Kirsti Thesen Saelen (NORDICOM, Norway) the COMNET co-ordinator, and attended by ten representatives of COMNET centres, and three observers namely the Friedrich-Ebert-Stiftung, FID, and the International Association of Mass Communication Researchers (IAMCR). It was the first time that a COMNET Directors' meeting was held in the African region.

The main points to the discussed concerned, first, the structure of the network which needs to become better structured, more dynamic, more concentrated on output and dialogue and, secondly, financing and external sponsorship which have to be sought.

It is notable that this evolution process has already started. To begin with, the revised version of the *Unesco Mass Communication Thesaurus* will be available in 1991. Conditions of memberships have changed and a new system has been introduced: all non profit-making institutions in the field of communication/documentation that share information with others are now able to join COMNET.

At the Directors' Meeting, it was decided that new organisational procedures will be spelled out within this overall structure, with considerable devolution to the regional level; final decisions will remain however with the International Committee.

The regional COMNET centres will be closely associated with Unesco's regional communication offices and with regional research associations.

The meeting also discussed the main outlines of a COMNET development project to be submitted for funding to a number of potential donors.

The next international COMNET meeting will be held in Sao Paolo, Brazil, in 1992.

ISIS Users Group Meeting

A project was taken-up by DESIDOC under the sponsorship of NISSAT to develop a library automation package using Micro-ISIS. The first phase of the package is now ready for field testing. This software package incorporates circulation control, acquisition control and on-line catalogue using ISIS Pascal. The package is currently being implemented at the DST library which has more than 5000 records. The serial control module is presently available in COBOL and will be converted to ISIS Pascal in the next phase.

A meeting of the users' of Micro-ISIS was organised in DESIDOC, Delhi during 7-8 March, 1991. The purpose of the meeting was to demonstrate the library automation package and to obtain the experts' comments and recommendations before the package is finalised for release.

Under another NISSAT project, a Devanagiri version of the ISIS package was developed. This package was also demonstrated to the participants.

Both these packages will be available to licensed users of CDS/ISIS. Details will be published in next issues of NISSAT Newsletter.

ATTENTION CDS/ISIS USERS

The Users of CDS/ISIS are requested to send the problems faced by them on Micro-ISIS to NISSAT for clarification. Also, if you have faced some problem and rectified through some sources, do let us know, so that we can publish it for the benefit of other colleagues. Address your Communication to the Joint Adviser, NISSAT/DSIR, Technology Bhavan, New Delhi-110 016.

NICFOS Annotated Bibliographies

1. Aseptic Packaging (1983-85)
2. Beet Molasses (1959-1988)
3. Cassava (1977-1986)
4. Cassava Starch (1976-1986)
5. Cocoa Flavour and Aroma
6. Cultured Milk (1977-1986)
7. Energy Conservation in Food and Allied Industries (14 Parts)
8. Ethanol Production (1976-1986)
9. Extruded Food and Machinery (1968-1986) 4 volumes
10. Food Grains (Publications of CFTRI and DFRL, Mysore)
11. Fumaric acid (1969-1988)
12. Indian Sweets (1969-1987)
13. Instant Noodles (1970-1985)
14. Khoa (1969-1987)
15. Lemon Juice (1978-1987)
16. Lemon Oils (1978-1987)
17. Lemon Pectin (1978-1987)
18. Papad (1969-1987)
19. Pomegranate (1969-1987)
20. Potato Starch (1977-1986)
21. Rice and Wheat Quality (World Literature) 1987 (Rice Quality 1969-1986; Wheat Quality 1975-1985)
22. Rice Bran and Rice Bran Oils (1970-1980) (1983)
23. Soy Sterols (1969-1988)
24. Tamarind Gums (1969–1987)
25. UHT-Milk (Spoilage) (1975-1988)

The cost of each bibliography or per part or per volume is Rs. 50.00. Postage extra.

For copies Write to:

The Area Co-ordinator, FOSTIS, CFTRI, Mysore-570 013, Karnataka.

Superconductor Abstracts

Superconductor Abstracts, a monthly Journal aims to serve as a medium for rapid dissemination of information to scientists and technologists about the recent trends and development in the discipline of High Temperature Superconductivity. The journal is published by CGCRI, Calcutta.

Abstracts are arranged alphabetically by author's name. Entries are serially numbered. There is an alphabetical subject index referring to the text by the serial number.

The Lucknow Librarian

While reconstituting its Editorial Board, the *Lucknow Librarian,* a quarterly journal of the U.P. Library Association, has secured the services of Prof. B Guha, Prof. Krishna Kumar, Prof. S.M. Tripathi, Shri S.B. Ghosh, Dr M.P. Satija and Dr A.S. Chandel as members of the Editorial Advisory Board. Prof. S.N. Agarwal continues as the Editor of the Journal.

BOSLA Resumes Activities

The Bombay Service Librarians' Association (BOSLA) has resumed its activities and plans to organize seminars and training courses for librarians. The new Chairman and Secretary are Dr S.R. Ganpule, Librarian Central Library IIT, Bombay and Shri D.N. Phadke Astt Librarian IIT, Bombay. Dr (Ms) Maya Avasia, Librarian TIFR is the Joint Secretary.

Topics of some of the forthcoming seminars are Problems of acquisition of periodicals, Mutilation of books and sharing of experiences in computerization.

SIS Office Bearers for 1991-92

Shri S. Nagarajan and Shri P.C. Bose were re-elected President and Secretary respectively of the Society for Information Science for another two year term (1991-1992). Shri Kuldip Chand and Shri I.R. Kumar were elected as Vice-Presidents while Shri H.C. Jain Continues to be the Treasurer. The announcement was formally made at the Annual General Body Meeting of the Society held at Trivandrum on 17 January 1991.

Obituary

We announce with deep regret the death of Shri Balaram, Scientist, Information Centre for Aeronautics (ICA) on 12 Dec 1990. He was 54.

Shri Balaram was responsible for Documentation, Publication and Dissemination wings of ICA at NAL. He made notable contribution in equipping the NAL library with the required hardware for the in-house computerisation projects and circulation control and in acquiring CD-ROM disks and drive for information retrieval. He was mainly responsible for setting up of National Information Centre for CD-ROM (NICDROM) at NAL under the sponsorship of DSIR (NISSAT), New Delhi.

A man of amiable nature and pleasant manners, he was very popular with friends and colleagues. He is survived by his wife and two sons to whom we offer our sincere condolences.

World Software Market

According to a recent study by the International Labour Organisation (ILO), the world market for software and computing services will rise to $1163 billion by 1991. The study states that there will continue to be rapid growth in the demand for packaged software, but that data processing will decline in relative importance because of technological advances and software engineering.

With respect to the developing countries, Brazil boasts of the largest market for computer services and software with the figure for 1987 standing at $4217 million. Corresponding figures for India were put at $337 million. The 1987 figures for other developing countries are: $130 million for Mexico, $147 million for China, and $129 million for Singapore. There is only a marginal collaboration between developing and developed countries in the software and computer services industry, concludes the ILO study.

Form IV

(See Rule 8)

1.	Place of publication	New Delhi
2.	Periodicity of its publication	Quarterly
3.	Printer's Name	Dr. A. Lahiri
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	Address	As above in (3)
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	Whether citizen of India?	Yes
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6.	Names and addresses of the individuals who own the newspaper and partners or share holders holding more than one per cent of the total capital	Dr. A. Lahiri Department of Scientific and Industrial Research, Technology Bhawan, New Mehrauli Road, New Delhi-110 016

I, Dr. A. Lahiri hereby declare that the particulars given above are true to the best of my knowledge and belief.

March 1991

Sd/- A. Lahiri
Signature of Publisher