The World Telecommunication Day was Observed Yesterday

Telecommunications and Human Development

Message of the ITU Secretary General

Celebrated annually on 17 May, the Day commemorates the founding of the International Telecommunications Union in 1865, under the name "International Telegraph Union", by the plenipotentiary representatives of 20 States signatories of the International Telegraph Convention — the first intergovernmental treaty for the regulation of international telegraphy.
The theme of this 25th World Day, "Telecommunications and Human Development", is defined as being the role which telecommunications play in humanitarian action, the promotion of human rights, the universal availability of medical care, access to education, employment, environmental protection and economic development.

EACH year, as you know, the members of the International Telecommunication Union choose a theme for World Telecommunication Day. This theme is intended to highlight some aspect of telecommunications which is particularly important for the world community. For 1993, the theme we have chosen is "Telecommunications and Human Development." This theme reflects the increasingly important role played by telecommunications in the development of human potential, in harmony with our natural environment.

At base, very human society from the most primitive to the most advanced depends on communication networks. It is communication networks which make it possible for groups of people to cooperate — to produce and exchange goods and services, to share ideas and information, to define their collective identity, to make decisions about their common interests, and to assist each other in time of need.

Throughout human history economic, social, cultural and political development have always depended on communications. In today's information society, all these facets of human development increasingly depend on electronic telecommunication networks.

Let us look at some of the ways this is happening.

In the area of economic development, as well as being an important industry in their own right, telecommunications contribute to increased productivity and increased job opportunities in all economic sectors.

Telecommunications also have an important effect on the nature and location of work. They help companies to optimize the use of human resources, particularly through the decentralization of operations and the creation of "telework" opportunities for people who might not otherwise be able to participate in the labour market. At the same time, telecommunications can potentially help to counteract the social displacement and disorder that characterize industrial society, by reducing economic migration between rural and urban areas, as well as between developing and developed countries. In the past, migrations of this kind were generally based on hopes for better living conditions. The reality was often something quite different — crowded urban slums, inadequate health care and other social services, crime, and strain on the social fabric of societies. In the future, telecommunications will hopefully help create more balanced social structures by providing job opportunities and an improved quality of life in all countries and regions of the world.

Telecommunications play an important role in improving health care. Two-way radio, telex and satellites are essential to the monitoring and control of many diseases on a regional and global basis. For example, telecommunication technologies played a crucial role in the eradication of smallpox. Telecommunications also help to make health care available in remote areas by linking rural clinics to major medical centres and allowing rural health care workers to consult medical experts in urban hospitals. In the field of culture and

education, the contributions of radio and television have been immense — both in promoting basic literacy and in broadening the outlook and enriching the lives of listeners and viewers.

Telecommunications play an important role in preserving and enhancing the quality of the natural environment, on which human development depends. Remote sensing satellites are indispensable tools for monitoring the earth's atmosphere, coastal waters, agricultural crops and forests. The data they gather enable us to identify the sources and effects of man-made pollution and deforestation as well as natural threats to the environment, so that we can better manage our planet's environment.

Telecommunications also have a very important effect on our political life. In recent years, a wave of democratic reform has swept the world, bringing about a new era of human rights and freedoms. This process has certainly been helped by the "real-time" coverage these events have received in both domestic and world-wide media, coverage which would not have been possible without advanced telecommunications.

As we approach the twenty-first century, telecommunications are becoming the single most important tool for human development. In fact, I believe that they are so important to the future of mankind that access to basic telecommunications services should be recognized by governments as a fundamental human right.

The Members of the ITU face an enormous challenge in the years ahead — the challenge to realize the vision of the more humane world which is possible through telecommunications. In 1993, let us dedicate ourselves to achieving this goal.

Pekka Tarjanne

Nepali Media Brings Wonders of Science to Remote Villages

THE scientific discoveries and innovations that are rocking the world today are often unheard of in Nepal, the Himalayan kingdom in South Asia known more for its snow-covered mountains, raging rivers and wild beauty.

Isolation has had a profound effect on the population of this land-locked country — more than 60 per cent of the population live below the poverty line and 65 per cent are illiterate.

Far from being unconnected, these two statistics are the basis of an IDRC-funded study by the Royal Academy of Science and Technology (RONAST) called "Science Popularisation." Researchers with the project realised that science and technology, if properly utilised, can provide answers to many of Nepal's development problems. The trick was how to disseminate knowledge of scientific developments in a country where rugged terrain separates communities and whose population remains trapped in the world of illiteracy and superstition.

RONAST took on the challenge in 1985 by launching a novel, 26-month pilot project designed to spread the word of science and technology through existing channels of mass communications. The project had fairly modest beginnings.

It started with RONAST inviting Nepalese media practitioners, publishers and editors to a meeting to get their views on how best to disseminate information about science. The participants from the media recommended in one voice that the project should make available information packages on science and technology as they "were not in the position of write science features themselves nor could they hire the services of specialised journalists," says Gokul Prasad Pokhrel, a seasoned journalist who headed the Science Popularisation project.

The need thus emerged for well-focused and simplified information packages on contemporary science and technology issues that were both relevant to the Nepalese and available to mass media outlets. In 1986, RONAST Science Features — a bi-monthly publication — was created to bridge this information gap. Free of cost, it was made available to more than 100 major newspapers published in different cities of Nepal, and the evidence is that the newspapers use it.

"Had it not been for the Science Popularisation project readers would not have found any science information in our weekly paper", says Jaya Prasad Dahal, editor and publisher of the Gaurab and Nepal Khabar weekly published in Biratnagar. Mukunda Parajuli, the editor of a new weekly called Janamancha, says "the credit for more science information in our newspaper definitely goes to the Science Popularisation project".

Even in the remote far western region of the country, the editor of Janmat weekly wrote a special editorial highlighting the role played by the project and the science features service.

"It is comforting to note that more and more newspapers are providing space to science information made available by us or produced on their own," says Mr Pokhrel.

Indeed, the science features service of RONAST has become a model for many newspapers and they have started publishing special columns and articles following the pattern of our features, he adds.

There is mounting evidence that this increased availability of science information has had an impact on the general public. "A story in the newspapers on the role of eyebanks in corneal transplants brought a wave of eye tissue donations from the general public," says Banbarilal Mittal, a secretary with the Nepal Eye Foundation.

There is mounting evidence that the increased availability of science information has had an impact on the general public

Researchers with the project quickly realised that, despite the success of the newspaper science features, there were people in remote areas who had little or no access to printed material.

Radio was used to overcome this hurdle and a 15-minute weekly Science and Technology Radio Programme, aired on Radio Nepal, was created as the second component of the project. Studies have shown that 55-65 per cent of the population of Nepal has access to radio.

The programme, delivered in a magazine-type format, comprised general knowledge on science, the latest news from science labs around the world, interviews with various scientists, features on scientific institutions, and a radio quiz question-and-answer portion.

The radio quiz programme, broadcast on the last Saturday of each month, quickly became a favourite of listeners. More than 400 letters from 75 out of the 76 districts in Nepal were sent into researchers and broadcasters working on the radio programme. Letters were even received from some neighbouring states of India.

An evaluation of the radio programme by a consulting firm found that out of 14 similar programmes being aired by Radio Nepal, the science feature was the third most popular.

For Shanta Bahadur Gurung, a key figure in the evaluation of the pilot project, the success of RONAST's newspaper science features service and its radio programme are all signs that the project in heading in the right direction. "The overall evaluation of the project shows encouraging signs that much of the information provided by RONAST is trickling down to the target group", he says.

Despite the popularity of these activities, there are still obstacles to overcome and room for improvement, Mr Gurung adds.

One strong limiting factor to the growth of science information in Nepal is the lack of infrastructure in place to train science journalists.

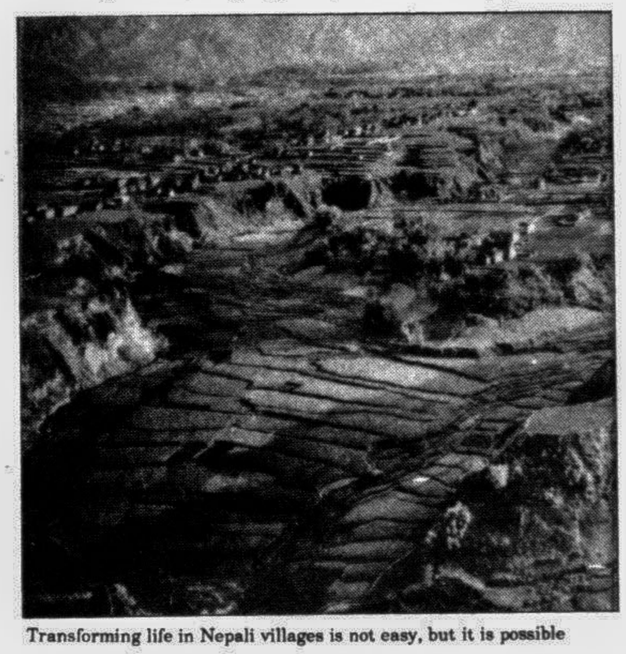
Developing the shills of science writers and broadcasters has become an important aspect of the project's activity. For the first time in Nepal two specialised training workshops on science reporting were organised for journalists in the project's first phase. In all, 40 science writers and broadcasters attended and benefited from the workshops.

Another obstacle facing the project is the lack of interest in science-related issues among young journalists; many find the subject cut-and-dry compared to political reporting.

"The country is in dire need of trained science journalists," says Jyoti Vaidya of the Matrabhoomi weekly who himself participated in the science writing workshop in 1986. "We want to start a regular science column and are looking actively for science journalists but there are none". Other editors of newspapers across the country express similar opinions.

"With our news feature service and the continued success of our radio programme, the situation for science popularisation is a lot brighter now than it was in the early 1980s", says Mr Pokhrel.

— (Depthnews Asia)



Transforming life in Nepali villages is not easy, but it is possible

Videoconferences: Meetings of the Future

by Peter Wymer *Specialist Writer on Telecommunications*

THE television telephone, with which communicators can see at least each others' faces, is as old as TV itself. Following demonstrations at the Berlin Radio Show in the early 1930s a public service between that city and Leipzing began in 1936 but did not last long.

The Picturephone service in the United States during the 1970s was also not a commercial success.

BT's (British Telecom) Confravision service launched in the mid-70s had special studios in city centres and, like all TV phone services up to that time, needed to use many circuits simultaneously to provide high-quality pictures. Confravision enabled business people to hold meetings via TV between the studios but had little general appeal, possibly due to the high line costs involved.

Advances have since been made, and at this year's Ideal Home Exhibition in London BT demonstrated a prototype videophone for home use. This incorporates a small camera and a 76-mm colour screen using a liquid crystal display. It plugs into a standard telephone socket. Designed and manufactured by GEC-Marconi, it will be on sale in Britain by year's end, costing £400.

The device compresses both voice and colour video picture into a 14.4-Kbit data stream that can be sent over an ordinary analogue telephone circuit. By eliminating the need to use many telephone circuits simultaneously, pictures of a quality satisfactory for the purpose can be carried at the cost of a normal telephone call.

Products Launch

However, it is the business side that has seen the most progress. These have been made possible by the modernisation of the British telephone system, which can provide an integrated services digital network (ISDN) to some 86% of businesses. This enables higher quality TV phone services than the domestic viewphone to be provided at similarly low call costs. This service can be enjoyed by those connected to the latest digital exchanges, of which more than 4000 are already in service. BT has made a £20 million investment in developing sophisticated visual telephone services over the last five years to exploit this.

A wide range of videoconferencing products including personal computer-based videophones are scheduled for launch by BT early in 1993. ISDN provides integration of voice, video and data signals over a single network and is the agreed form for all future telephone systems. Its abilities include allowing highquality videoconferencing at ordinary phone-call prices. This means businesses can hold dial-up, face-to-face videoconferences world-wide, and BT expects it to expand the market considerably.

British Telecom's new PC-based videophone (scheduled to be available from the beginning of 1993) is set to revolutionise business communications in the next decade.

In addition to the spread of ISDN, recent ratification of ISDN videoconferencing standards has facilitated communication between different manufacturers' products. Last year, six leading telecommunications organisations (BT, Deutsche Telekom, France Telecom, Norwegian Telecom, PTT Telecom and SIP Italy) agreed to cooperate to establish a Pan-European videophone service. A move towards worldwide compatibility is evidenced by companies in the United States and Japan planning to conform to these standards.

Essential Element

BT has been a leader in setting standards for visual services and was first to produce equipment compatible with those recently agreed (H261 compatible). Without standards, manufacturers are understandably reluctant to invest money or resources. An example was the retardation in the VCR market until the VHS/Betamax dispute was resolved.

An essential element of any video telephone link is a device that compresses and digitises TV picture signals for transmission over digital circuits. These are called videocodecs (coder/decoders). Collaboration in England between IBM's laboratory at Hursley and BT's research centre at Martlesham has perfected a technology that enables this process to be effected within a personal computer (PC).

This combination of BT videophone hardware and the specially-developed software from IBM will enhance desktop interworking. BT says: "The main benefits to users will be faster decision-making, speedier and more efficient use of scarce human skills, and time savings from reduced travel and improved corporate communications."

In addition to providing videoconferencing facilities for PC users, this development will significantly enhance all forms of desktop interworking, including file transfer and access to remote databases.

International Standardisation

The primary initial market seen by BT is existing information intensive PC users, working with medium to large companies, their customers and suppliers. The technology uses the recently agreed international set of standards, ratified by the CCITT, and known as the H320 series, which cover the H261 video compression standards mentioned above, with synchronised voice and simultaneous information transfer over one or more ISDN channels.

IBM and BT plan shortly to publish specifications and application programming interfaces (APIs) so that engineering directions are fully open, permitting other manufacturers and network providers to work to the same standards. This would allow users to connect equipment manufactured by different companies. The ubiquity of the ISDN system enables British users to link with 24 overseas Networks in 16 countries, including ten major European countries and eight regional telephone networks in America. Connections are also available to Networks in Australia, Hong Kong, Singapore and Japan. This is the highest number of international connections offered by a European operator and second only to AT&T in the world.

All that existing users of IBM-compatible PCs will need for this new desktop video service is a special electronic card, providing the necessary software to turn their PCs into viewphones, and a small camera. The cards are scheduled to be available early next year, with the necessary hardware. It is estimated that for about £4000 purchasers will get an electronic videocodec card that fits into the back of the PC, a camera and a connection to the ISDN Network.

Desktop Units

For organisations wishing to arrange face-to-face communication on a regular basis for groups of personnel, more specialised equipment is, or will shortly be, available from BT's Visual and Broadcast Services. Desktop videoconferencing units will be on the market by the end of 1992. These are dedicated visual tools, which can have added document readers and auxiliary cameras. Costing some £7000 to £8000, they will allow small groups of people to meet and send pictures or videos. BT is targeting these products at medium-sized companies already interested in remote meetings.

A basic low-cost digital videophone projected for the future will allow face-to-face meetings from people's desktops whether in the office or the home.

On a larger scale, aimed at board or senior government level, videoconferencing cabinets are already available to accommodate up to eight people. Extra features include the ability to send documents, graphics and computer data while a meeting is in progress. Auxiliary cameras allow participants to move around and demonstrate, for example, by writing on flip charts.

Videoconferencing advantages

Some videoconferencing benefits are in the possibly more efficient transfer of information between individuals compared with using the telephone alone. According to recent research, body language is responsible for up to 80% of the impression we make in conversation and, with videoconferencing, potential savings in travel costs and time are considerable. A recent survey by BT found 60% of senior executives from small to medium-sized companies spend at least one day a week travelling to meetings; 43% spent over six hours a week travelling.

Another advantage is that companies with videoconferencing facilities can arrange meetings at short notice. They have also found a change in the conduct of such meetings. One manager is quoted as saying "it enforces a discipline not present at normal meetings. Less time is spent on greetings and incidental chatter. The result is invariably a better, quicker conclusion to the meeting." In other words, the implicit drawback of videoconferencing — that it is not a complete substitute for an actual encounter — may be turned to advantage.

The world market in visual services has been estimated at over $3 billion dollars in the next three years. Just as fax machines and photocopiers swept through the office in the last decade, BT sees videoconferencing and its products as likely to do the same in the 1990s.

— UPS

The Dance of the Molecules and the Birth of the Stars

by Martin Ebeling

THESE so-called interstellar molecular clouds are made up of gas atoms and molecules and traces of dust. Comprising only 1000 to 10,000 particles per cubic centimetre, they are so "thin" that an artificially created vacuum on earth would appear as a "thick broth" in comparison.

However, such are the huge dimensions of these clouds that starlight would need 100 years to pass through then — even assuming it was not "swallowed up" before hand. The material contained within just one gigantic molecular cloud can equal that of 10 million stars the size of the sun.

The clouds are dark because they are unimaginably cold — with temperatures as low as — 260° Celsius.

However, molecular clouds are not totally "invisible". Their minute constituents are permanently in motion and in some of them the molecular electrical charge is unevenly distributed. An example is provided by carbon monoxide (CO), the most common trace gas in the clouds, which are otherwise primarily made up of hydrogen and helium. Its oxygen atom (O) is weakly negatively charged, whilst the carbon atom (C), carries a weak positive charge; it is electrically polarised, although the molecule is electrically neutral.

For many years those huge dark clouds which permeate large sections of the Milky Way were regarded as something of a nuisance by astronomers and "star gazers", concealing many stars behind their opaque veil. However, researchers have now discovered that by simply "looking properly," or to be more exact, by suing radio telescopes these dark clouds can provide a wealth of information on the formation of stars in the Milky Way

Such polarised molecules can be stimulated into performing a molecular "dance" of oscillations and rotations by the oscillations of the electromagnetic waves. At lower temperatures, however, this dance merely takes the form of pirouettes. This activity ceases when the molecule re-emits — in the form of an electromagnetic wave — the energy which collided with it. The wavelength of this minute transmitter is in the one millimetre to one tenth of a millimetre range and is thus invisible to the human eye — which explains why the clouds appear dark and require a radio telescope to be examined.

Such a telescope is located at the Cologne Observatory for Submillimetre Astronomy, KOSMA, on the Gornergrat, near the Swiss Alpine town of Zermatt.

In attempting to understand this process, the Cologne scientists are currently studying the molecular could in the constellation of Orion, where — obscured from human view by the "parent cloud" — total of 500 stars were created in a region of space containing a mass equivalent to 2000 suns.

At the end of its life, each star returns a large proportion of its mass to the surrounding molecular cloud. The most spectacular examples of this process are the supernova explosions in which the core of the star collapses under the pressure of its own gravity and condenses to an approximately 12 kilometre large neutron star, whereas the material surrounding it is hurtled out into space in a huge explosion. Thus the rounding it is hurtled out into space in huge explosion. Thus the "cosmic cycle" is closed and a new generation of stars can be born.

— German Research Service