

Feature Science and Technology

Computer Technology in Newspaper Industry

by Rathindra Nath Sanyal

IN newspaper industry, computer technology has been introduced as a new means of production. But on the question of utilization of full technological support, there is no doubt the newspaper industry in the country is lagging far behind compared to other countries. With the introduction of video display computer terminals, the system of work has been easier and more visible. But the men who run the computer terminal must be more aware of the use of typographic style, font, width, leading, column, and all other various details for make-up of a newspaper page. Today, a reporter should have his own computer terminal and for all practical purposes, should develop a strong link with the page designer.

Nowadays, a successful publishing employee should develop skills equivalent to two professions. By computers, a page editor can work hand in hand and present the news very attractively if he wishes. He can position the copy and headlines in a totally planned way avoiding much guessing and improvisation that has been done traditionally.

Computer layout system can be programmed to perform such functions as sizing, cropping, and correcting photographs, writing and fitting headlines, considering various story arrangement alternative, creating and keeping track of jumps, and trimming and editing text. Already made-up story or stories can also be replaced with new ones for later editions.

The first computer-page layout system was introduced by Hendrix, Electronics of Manchester, for Gannett Westchester Rockland Newspaper, in 1980. Nowadays many newspapers are doing their page layout by computer.

By auto pagination system, a page editor could call a story up on the video display termi-

nal screen, put in some commands, and compose the text. The computer would hyphenate and justify the text, also spell check and return it to the screen, showing how each line justified and the precise length of that story in that type size and width. If the editor is not satisfied, he can change the codes and reset the type in seconds in different sizes and widths.

Indent, initial drop letter, wrap around, and a host of other typographical devices have become so easy.

1980s were the years of pagination, electronic camera-

been fulfilled by the computer. Diagram shows how a modern typical newspaper industry can work by computer systems. System consists of sub-systems and the functions are briefly described as follows:

Business system by which payroll, billing of all ads, payment of all bills, daily layout of paper based on human intervention can be done. It provides all business records for advertising, circulation, and news.

Display ad system can scan and display ad graphics in position on computer screen. Composes text of ads, prints

all legal ads and stores by publication day, organizes output and sends it in paginated form to controller computer in time.

Photo and graphics system can receive all wire-photos, scans in local photos, art, logos, stores all photos and graphics, crops and enhances photos and graphics, tells appropriate system or controlling computer sizes of photos and graphics for pages to controlling computer, in future stores in disk photos and graphics needed for later use.

News input system can receive reporters' input, wire input,

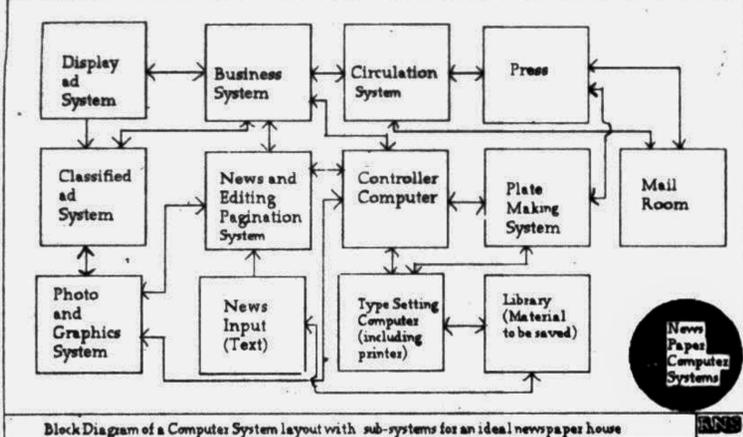
receives page layouts from business office, receives copy from news input, receives photo and graphic system, layout news text on pages, gives controller computer directions of preparing pages for plate maker.

Controller computer system as the traffic cop for production of pages, organizes, schedules, and retrieves advertising, editorial text and graphic material for output to laser plate maker, sends material after use to library for storage.

Plate making system can be done by using laser beams that produces complete page to be placed on press manually, sends signals to press units for ink controls depending the density of photo and type for better production.

Circulation system can do the list of all subscribers, list of all non-subscribers, all readers, paid-in-advance or billing notices, all reader complaints on service, and demographics in market. It produces clear lists for each carrier each day, determines who gets what ad supplement, determines press order, and controls size of bundles in the mailing room route by route with direct links to the stacker.

The pagination system is at the centre of the electronic newspaper because virtually every journalistic function is aimed at producing some part of the page.



darkroom and the laser plate-maker. Pagination is the art of layout of a page by a designer, like the act as a painter who can execute the page totally. The full pagination can now be done by computers.

New-generation readers of the electronic age are very much interested about the typography of newspapers. The interest of these readers has

the ad by printer maybe for proofing, production or storage. Also scans all complete ads ready for use, create classified system. An order of information can be sent to the business system.

Classified ad system can input all inner ads, stores ads by publication date and category, sends billing information to the business system, handles

copy from all non premise remote systems, retrieve information from library, does preliminary editing of wire copy by news desk, and preliminary editing from metro desk for local copy, uses the news and edit pagination system.

News and editing pagination system can serve as the hub of the electronic newspaper,

Research on Coastal Afforestation Reveals New Borer Pest

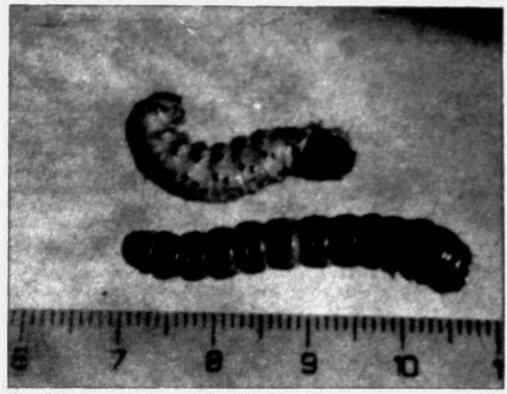
THE vast tract of coastal forest grown at a cost of several hundred crore Taka is known to be severely affected by the attack of a borer, commonly known as Keora Bee-whole Borer — the larva of a moth known as Zeuzera conferta (Family: Cossidae, Lepidoptera).

The wood-boring larva of the moth makes tunnels through the woody part of Keora trees and weakens them. As a result, the trees planted to protect our coastal areas from tidal surges and cyclones can hardly withstand the normal wind. Experts are unanimous that the coastal forest is doomed unless something is done to protect the Keora trees on emergency basis.

Recently a team led by Professor S H Chowdhury of Chittagong University has begun an investigation on the biology of Z conferta under the aegis of Man and Biosphere, Bangladesh (an international programme under UNESCO) with a financial support from UNESCO, Paris. The investigation has confirmed the presence of a second borer attack

ing Keora trees identified as Catephia linteola (Family: Noctuidae; Sub-family: Quadrifinae, Lepidoptera). The nature of damage of this borer is very similar to that of Z conferta. Widespread damage was recorded at Sitakunda, Mirsarai and Chandradwip forest ranges. The new pest also attacks Babla.

Goran and Honboloi trees growing along with Keora. It has also come to the notice of the team during the research that infestation of several forest trees other than Keora, namely, Kokra, Nonajhau, Goran and Bain are caused by Z conferta which was not known so far.



Small insects that prove fatal to large trees

Laos catching Up on Needed Scientific data

by Mark Timm

LAOS has a library of 13,000 scientific and technical books. There was just a slight hitch — the books were in French and English, with a few in Russian. They were of little use to any but a handful of senior technocrats who had the good fortune to be educated overseas in one of these languages.

Scientific and technical literature are an essential part of the infrastructure that supports development in a country.

the money had to go toward training in photocopier maintenance.

There were also significant signs of success in acquiring and disseminating information. By the end of the project in 1989, more than 7,000 new volumes of scientific material and 20, 3-year periodical subscriptions were obtained by the centre.

Actual use of the CNDIST library increased almost 10-fold after the IDRC project. The centre now has 600 members, compared to fewer than 100 before the project. These figures do not include members of the public who use the library but do not borrow books.

Through dealing with Thai literature and interacting with

Scientific and technical literature are an essential part of the infrastructure that supports development in a country. Information is the lifeblood of science

more users, the CNDIST staff has learned valuable lessons in information management. The project has enabled the centre to establish contacts with key research institutions and documentation centres in Thailand, like Kasetsart University and the Asian Institute of Technology.

During three book-buying trips to Bangkok, Laotian officials were guided by their government's economic plan, which stresses the development of the country's agriculture, small-scale manufacturing, and services.

They brought back everything from rice-planting manuals to volumes filled with pesticide data, from pattern-processing guides to information on how to set up a small ceramics business.

Many Laotian government agencies have their own specialised libraries on these individual subjects. But the IDRC project resulted in the first,

comprehensive interdisciplinary collection of science and technology literature.

As such, CNDIST contains information on topics like environmental conservation or remote sensing that would otherwise fall through the cracks of bureaucratic specialisation.

"Even the decision-makers call on us now," says Moukh Savanh, the current director of the centre. "Many government ministers are now our members."

It is important that the centre not just collect information but disseminate it to as many levels of society as possible, Mr Savanh adds.

To increase awareness, advertisements are regularly published in the local newspaper about what literature is available. More comprehensive lists of about 1,000 titles are occasionally distributed to researchers and development-workers nationwide.

IDRC's project also included training in information packaging at the Bangkok-based Asian Institute of Technology. In early 1991, the centre experimented with a quarterly, mimeographed scientific review for specialists. The journal carries news on recent developments in the field of science and technology relevant to Laos.

The Centre is also planning weekly articles on new development in science and technology to be published in the local newspaper.

"Right now there is a great deal of information in Laos, but it is not centralised and, therefore, not easy to find," he says. "We have to organise some kind of national network."

"Our ministry's goal is to coordinate and supervise research and technology transfers at the national level," Mr Savanh explains. "If people need information, they now know they have our centre."

Towards Tomorrow's Automatic Merchant Ships

by G. V. Joshi

WITH the current revolution in computers, satellite communication and global positioning systems, the merchant ships of tomorrow may sail the high seas unmanned, controlled by an onboard computer with sensors all over its decks, bridge and holds and in touch with the main office by a satellite link. The crew will disappear, ousted by hi-tech equipment.

Since the operating crew — captain, mate, chief engineer and his assistants, sailors to handle cargo and cooks to feed them — are costly to support, much work has already been done to reduce their number. In 1940s, for instance, a 10,000 tonnes deadweight carrier of dry cargo (as opposed to liquid cargo like crude oil) with steam turbine propulsion required a crew of over 50 men; its present-day diesel-propelled counterpart needs little more than a third of this number.

The first steps down this road were taken with the unmanned engine room. Modern power plants lend themselves to running unattended, their performance constantly monitored by electronic data loggers.

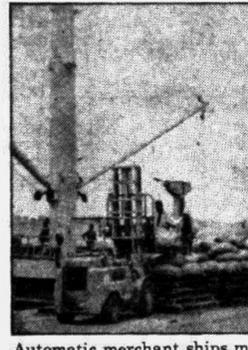
Comprehensive alarm systems back this up, so that only a minimum number of engineers are needed to carry out planned preventive and routine maintenance during normal working hours. Catering staff, too, has been pruned by the introduction of frozen, pre-prepared meals and microwave ovens to warn them in minutes.

But the most dramatic change will come with remote — controlled navigation, for which the technology largely exists already. At first, only deep-water passages will be tried, with the ship's computer programmed for the required course. Any deviation will be detected as accelerations by inertial navigation equipment (guidance system which depends on accelerometers rather than age-old magnetic compasses) and fed into the course correction circuit as signals.

Regular master checks with a world-wide range will be made either by satellite observation or by a global positioning system (giving the position within a few seconds to an accuracy of a few metres) in order to correct drift error

But the most dramatic change will come with remote — controlled navigation, for which the technology largely exists already. At first, only deep-water passages will be tried, with the ship's computer programmed for the required course.

due to wind and current. The shipping company headquarters will be in constant command via a satellite link, and will re-route the ship as necessary to bypass areas of heavy weather, revealed by



Automatic merchant ships may promote trade worldwide

satellite surveillance. Automatic monitoring will detect any malfunction and back-up systems will allow an instant correction to be made by a simple changeover.

Items other than machinery will benefit from these data checks. The cargo condition will be constantly checked and even the hull will be gauged for imposed stresses due to, for instance, slamming or twisting by waves, allowing the ship to be slowed or re-routed.

As of today, major hazards exist in crowded coastal shipping lanes and port approaches. Fortunately, there is a multitude of fixed points for navigation control beacons which will detect the position

of each ship and enable its progress to be closely monitored.

Separation zones will be compulsory, if space permits, fast and slow lanes or, in congested passages, the use of convoys with ships travelling

in groups. Despite the use of these zones, other ships will be encountered on trunk routes. As soon as a vessel's radar detects another remote-controlled ship, the on-board computer

For instance, the ship could be made to follow a coded signal from a cable laid on the river bed. Parallel rows of transponders (devices which emit beeps when they receive signals from any passing ship) could also be laid to give the ship's computer a continuous check on its lie in the channel by measuring the time lapse between transmitted and received signals.

The fuel of the future is still open to many questions. Oil will remain a favourite for propulsion as long as freight rates can bear it and new reservoirs are discovered.

Some attention is being to coal. Stoking coal will remain a thing of the past since coal can, if finely pulverised, be made to behave and used like a liquid. Pulverised, it can be slurried and pumped aboard like oil, in bunkers where it can settle in a dense mass.

The most difficult stage in automatic navigation will be in final port approach. Depending upon local conditions, it may be appropriate to meet the ship with a berthing crew; alternatively, on a long river passage as in Calcutta,

Japan has just concluded a successful field experiment in which a 10,000-tonnes merchant ship, with no crew and no captain, voyaged to and from the 32-km strait dividing Korea and Japan. The ore-carrying bulk carrier 'Shiuya' was entirely guided by an onboard computer and had a radar lookout, but no human had touched the tiller.

To begin with, blueprints are being drawn up for several flotilla, each having a conventional, manned mothership, taking under its wing a brood of crewless ships, their charting and tracking being controlled by a computer-controlled gyro system.

Next to come will be a crewless ship sailing alone from Tokyo to San Francisco.

— PTI Science Service

Jamaican Scientist Develops Home-Grown Solution

by Cedric Lindo

A frequent complaint against the industrialised countries is that they do not share their scientific knowledge with the Third World.

But one young Jamaican, a botanist and zoologist, isn't worried. Dr Lawrence Williams, 29, believes the scientists of developing countries are quite capable of discovering the science which made the industrial world prosperous — even improving on it.

And, as proof Williams is about to seek international patent protection for the two pesticides he has developed from plants — an improvement on the synthetic ones currently imported to Jamaica.

Williams is a senior scientific officer with the Scientific Research Council of Jamaica. With a team from the council's Pesticide Unit he has produced the two pesticides, specifically directed at the cattle tick and the coffee berry borer.

Field tests have proved their efficacy. Armed with these results, Williams is seeking to develop the pesticides on a commercial scale, provided they are protected against exploitation by larger and wealthier countries than Jamaica.

maican scientist did just the same thing with a derivative of marijuana, which had been proved to relieve eye tension in cases of glaucoma. It was patented and is now marketed under the trade name of Cannabisol.

A young Jamaican scientist doesn't pay much attention to the charge that industrialised countries should share more of their knowledge with the developing world. He thinks Third World scientists under-estimate themselves when they don't try to invent their own solutions. And as Gemini News Service reports, that's exactly what this young scientist has been doing — with great success.

Scientific papers on Williams' research have been presented at several international conferences and more than 20 respected scientific journals have published some of the result.

Caribbean region because of the cattle tick — which reduces milk and beef production — is estimated at some \$62 million every year.

And each year the coffee

berry borer destroys as much as \$15 million worth of coffee crop in Jamaica alone.

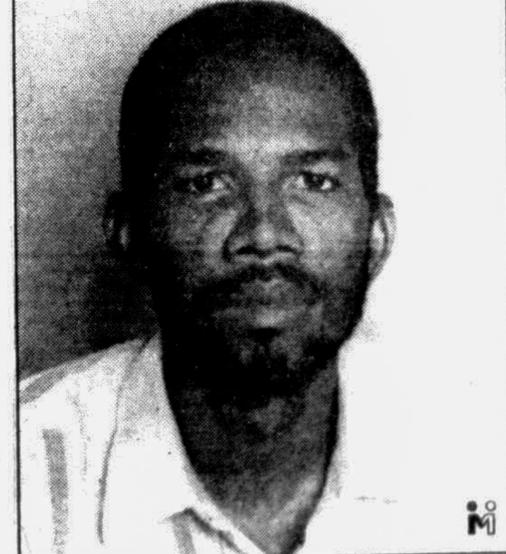
The locally-produced pesticides have other advantages over the imports: they are natural products and cause no harm to the environment, as well as being less toxic and directed only against the two pests.

The pesticides are the result of five years of research, begun when Williams was an undergraduate. He was fascinated when he found that cattle would avoid eating certain plants and fish would shy away from some marine plants.

Investigation proved that these plants had developed certain secondary products which were unpleasant tasting to cattle and fish.

They had been developed to protect them from predators and were found also to be harmful to pests of cattle and coffee berries. They were isolated and tested on the two pests, and proven to kill them.

Williams has received international recognition for his research and won numerous awards, including the young Scientist Award, given in Japan by the International Congress on Invertebrate Reproduction.



Dr Lawrence Williams

Science Brief

Plastic Bolt is Light, Safe and Tougher Than Steel

A fibre-reinforced plastic bolt stronger than steel but for more friendly to its working environment has been developed by a small Adelaide research company, reports *Australian Science and Technology Newsletter*.

Research of Australia (AROA), which specialises in research, development and product prototype manufacture and the design of manufacturing equipment.

The Australian mining industry uses about six million steel bolts a year and requires 600,000 dowels. While the plastic product is more expensive to install, it shears off cleanly when struck by coal-cutting equipment, a common occurrence. The plastic bolt quickly pays for itself through reduced machinery damage and absence of coal pollution.

Another advantage is that, unlike its steel counterpart,

the plastic bolt does not have to be removed from the wall or roof, thus eliminating what can be a dangerous operation.

AROA managing director, Mr Peter Hastwell, said that coal mining in Australia was highly automated. "They use huge machines to cut the coal out," he said. "If the cutter hits the steel bolt a lot of damage results." Despite the use of electromagnets on conveyor systems, steel fragments often got through to create problem in the processing stage.

"One of the problems with our product is the perception that plastic is not as strong as steel," Mr Hastwell said.