

News, Trends and Comments

NEWS

Arthur Elias, co-editor of *Information Services and Use*, is retiring from BIOSIS in March 1992, but not, as he said in the last issue of *IS&U*, from the information business. After a period with Infomatics, Art joined the Institute for Scientific Information (ISI), Philadelphia, in 1962. He moved down the road to BIOSIS in 1974 where he is Director of Marketing. However for most people Art *is* BIOSIS - I don't know how they will manage without him. He will be succeeded by Diane Hoffman who arrives at BIOSIS via ISI-BRS-Disclosure-Maxwell. All the best Diane.

I first met Art in 1967 for dinner at The Anchor, an Elizabethan pub on the South Bank. It was a good choice - he and his family were entranced with the place. I had just joined ISI and could always be sure of a friendly welcome whenever I was in Philly.

Following his resignation from Reuters another long-time friend, *Dr. Charles Oppenheim*, will be joining Strathclyde University shortly as a Professor, succeeding Blaise Cronin. Charles was a lecturer at City University and we always seemed to be running into each other at various conferences. Charles was noted for his splendid T-shirts. Soon after leaving City, and much to the regret of the information community, he tacitly admitted joining the establishment (or so it appeared) by shedding such garments, getting a haircut, and generally putting on an air of respectability. I suspect that he's still a rebel.

Dr. Bernhard Jehle is the new Administrative Director of Fachinformationszentrum (FIZ) Karlsruhe. FIZ was formed by merging several separate organisations in 1978 under the former Director Mr. Ernst-O Schultze. Dr. Jehle was formerly at the Julich research centre from where he moved to Mannesmann Kienzle.

Adonis News 2(2), November 1991 (+31 (0)20 6842206) lists a number of enhancements and new developments in the ADONIS service. The publication also includes information about production, marketing, exhibitions, new titles covered etc. A single-drive jukebox manufactured by INCOM in Germany, with a capacity of 100 CD-ROM discs, is being tested, together with a number of network drivers. It is expected to be available early in 1992 at a price of about \$9000.

Aslib's (+44 (0)71 253 4488) 1992 Training Directory lists the numerous courses to be held at its offices in Old Street, London. Subjects include Online Searching, Records Management, Statistics for Beginners, Classification Techniques, Health Informatics, Copyright, and many more. All the courses last for one day. Fees vary from about £150 to £220.

The *British Library*, with some additional funds provided by the Andrew Mellon Foundation, New York, is supporting a 5 year project at Cimtech, Hatfield, UK (+44 (0)707 279691) on digitising microfilm and printed material in libraries, and in the exploitation of OCR (currently using a Kurzweil K5200 machine).

"Microfilm is the preservation medium of choice for archival collections" says the British Library, and vast amounts of it are stored by various organisations. "The objective of the project is to investigate and demonstrate the factors involved in digitising specific library materials such as rare manuscripts, 35mm roll microfilm, slides, and photographs".

Dialog's training and seminar leaflet covers these activities up to March 1992. Dialog Europe's offices are in Oxford (+44 (0)865 730275), and they also have local offices in most European countries. Their seminars are given at many of the major European cities. Dialog have recently opened an office in Fleet Street, London (Knight-Ridder's headquarters) to provide additional support for major UK customers.

Disclosure Research (+44 (0)71 278 7848) announced on October 25th 1991 a system delivering information in several media covering public companies in the US, UK, and Europe, and offering customised paid research without joining costs, subscription charges, or membership fees.

Janet Gilbert, ex-deputy head of the British Library's Business Information Service, is heading-up the service.

Elsevier Advanced Technology (+44 (0)865 512242) are now publishing a monthly newsletter entitled "Information Management Report... designed to help you take advantage of every opportunity which information technology presents to the information professional". The annual subscription is £155 in the UK, \$263 in the US.

Excerpta Medica (+31 (0)20 5803911) recently issued their 1992 edition of *EMTREE*, consisting of a thesaurus of 35,000 drug and medical terms, an introduction and quick reference guide to online host systems in seven languages, and an up-dated user manual for BRS, Data-Star, Dialog and DIMDI.

Institute for Scientific Information (215 386 0100 or +44 (0)895 70016) have added 17 new Research Alert Topics (announced November 1991), mainly in the life sciences. In this service, terms from profiles compiled by ISI covering selected subjects are matched against weekly input to their database, and a "hit list" is sent each week to subscribers.

MGM Network Service (+44 (0)737 766268) enables you to capture data from the UK free teletext (broadcast TV spare lines) services Oracle and Ceefax. A dedicated PC acts as a server on a network. The PC receives signals from a normal TV aerial (antenna) and captures pages on its teletext receiver card. The DOS PC must also contain a network interface card for BIOS or Novell, and the server will supply up to 32 concurrent users who may selectively retrieve pages.

The price, which includes the software and the teletext card varies from £995 for 5 users up to £3095 for up to 32 users.

SovData Dialine, announced September 1991 by Mead Data Central (312 431 3553) is a collection of English language databases from the Soviet Union. Currently on LEXIS/NEXIS and soon to be running on a number of other hosts, it includes coverage of *Soviet Press Digest*, news from 150 business journals, a company directory, law and regulations, associations, and a Who's Who.

Trend Monitor's (+44 (0)705 864714) Strategic Briefings are "based on the study and systematic classification of 15,000 articles annually selected by a team of expert scanners and analysts as being the most

significant published each year". Three Strategic Briefings are available - "Electronic Document Distribution" (£95), "Data Security" (£55), and "The Tele-Economy" (£35). You can get all three for £150.

Trend Monitor will be launching its database for running on PCs in the new year. It contains "a two year perspective on computing, communications, and media subjects selected from more than 400 publications". The database uses Strix full text retrieval software and will run on most machines using MS-DOS or UNIX operating systems. The price is £1450 for two years to date plus £650 a year for regular up-dates.

UK Office for Library Networking (UKOLN) at the University of Bath (+44 (0)225 826580) reports progress in its most recent newsletter. The office was set up by the British Library research department in order to "promote effective use of the existing and developing network infrastructure in the UK and abroad and to interest the technical and commercial world in the requirements of the library and information services community". A six year strategic plan has been agreed in association with the Centre for Bibliographic Management.

UMI/Data Courier (800 626 2823) continues to emit a stream of press releases. In November they announced "a major upgrade to ABI/Inform on Data-Star... marking the file's 20th anniversary". The file has been completely reloaded and a number of improvements have been added. The result is "a searcher's dream" says John Kelley, the contact at UMI/DC.

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Noted at the Exhibition

DIMDI (Deutsches Institut fur Medizinische Dokumentation und Information; 02 28 5390) is roughly to Germany what Dialog is to the United States. It provides online access to German and many other databases - in fact to about 50 containing at least 40 million records. Their new leaflet shows that a number have been added recently in Toxicology, Medicine, Biology, Biotechnology, Public Health, Addictions, Agriculture, and Current Contents Inter-disciplinary.

Hitachi were showing a very neat-looking multi-drive CD-ROM unit, the 14000 series, built in a small tower with its own power supply and complete with cabling and software and either an AT or MCA bus card. The tower contains from 2 up to 8 drives. The four-drive unit, for example, costs about £2000.

In their publication *CD-ROM Directions* for October 1991, Hitachi rebut comments made in the *Byte* September 1991 issue criticising the 1700S drive. They claim that in most respects the 1700S drive should come at the top of the list.

ISI has been prompted by the arrival of CD-ROMs to do something which they have been thinking about for years. They have started to sub-divide the *Science Citation Index* into major disciplines and provide searchable abstracts with the Source Articles. So far there are three discs covering Biotechnology (about 55,000 articles a year), Chemistry (about 85,000 articles a year), and Neuroscience (about 45,000 articles a year). The "Related Records" facility - whereby those articles most likely to be about the same subject are automatically made accessible with each "hit" article - is included.

The subscription for each of the three discipline-oriented CD-ROMs is \$1950 for the 1991 disc or \$2995 for the 1991 and 1992 discs. An annual subscription includes bimonthly up-dating discs.

The *Philips* CM50 CD-ROM drive is now available at what must be the lowest price of any drive - £299.99 including VAT in the UK. The company says that this price reduction has been enabled by the increased volume of production.

Philips CD-WORM. The *Philips* CDD 521 CD-R drive is in fact a Write Once Read Many (WORM) device. They do not call it a WORM, perhaps to avoid confusion with the other WORMs which are not members of the CD family. The drive was developed as a storage device for the *Kodak* digital camera.

When the CD-R drive's laser operates at high power it records by burning its own pits. At lower power it works like a CD-ROM read laser. A disc may be read on any standard CD-Audio, CD-ROM, CD-ROM XA, CD-I, or Photo CD drive. The maximum writing speed is about 20 Mbytes per minute, so its 600 Mbyte capacity can be filled in about half an hour.

At least two applications come to mind. It could be used for the low quantity production of CD-ROM databases, or as an archiving store; you fill it up all at once, or stage by stage - of course avoiding overwriting the already written part. There is no reason why the disc could not be sent out for mastering if larger quantities are needed but there would be no particular advantage - i.e. it could not itself be used as a master; the data would first have to be read and a master made in the usual manner.

The price is expected to be around £5000; discs will cost about £10 each. It should be available in the second quarter of 1992.

Silver Platter list about 80 CD-ROM databases in their current catalogue covering a very wide range of topics. The largest by number of records is *Medline Standard* with over 7 million records, increasing by 300,000 annually, supplied on 16 discs. The smallest will be the *Banker's Almanac* (coming soon) providing information about banks in 175 countries, containing 3600 records.

Conference articles noted

The *Proceedings of the 15th International Online Information Meeting*, London, 10-12 December 1991, are available from Learned Information (+44 (0)865 730275), the publishers.

The topics this year seem to be more diffused - no particular area is obviously fashionable. Out of 55 papers, there are 6 about Hypermedia/Multimedia/Mixed Mode/Hypertext etc., 5 to do with CD variants, 4 about price or value, 3 about Numerical Databases, and 3 about Networks.

Going for the unusual, from *Walter Claassen's* (University of Stellenbosch) "Bible information systems" we learn that such systems are numerous. Not only that, they use the most current techniques although in this context the terminology looks rather incongruous. I can't really adapt to *Hyperbible* - a system developed in the States.

Weighting schemes to produce rank ordered hits are still being investigated. *Michael Keen* (University College of Wales at Aberystwyth) in "Query term weighting schemes for effective ranked output retrieval" remains optimistic, but such schemes "still need further study". As a student of citation practices I note that *Gerry Salton* is not directly cited by *Keen*. *R.K. Merton* coined the phrase "Obliteration by incorporation" - the work has become so well known that it is "taken as read". So it is with *Salton's* work on the SMART project.

"Free text versus controlled vocabulary" is a controversy which started even before *Salton's* early work on weighting. *Fairthorne* discussed the use of thesauri at an AGARD meeting in 1957, and in the very

first volume of *ARIST* (1966) then edited by Carlos Cuadra, Phyllis Baxendale in her chapter about content analysis points out that there is disagreement about the need for vocabulary control. She cites five articles which "discount the necessity for such control".

However R.Betts and D.Marrable (CAIRS systems) in "Free text vs controlled vocabularies - retrieval precision and recall over large databases" consider that "Given that ranking is simple and rapid... the thesaurus, while giving us greatly enhanced recall, does reduce precision ...(but) the value of the improved recall far outweighs the cost of thesaurus construction".

In "The use of HyperCard to store downloaded bibliographic information", E.G.Sieverts and S.H.Muller (Algemene Hogeschool Amsterdam) describe the downloading of data into HyperCard stacks, and the use of HyperKRS and HyperIndexer software.

The latter appears to organise free text indexing - presumably by creating a vocabulary with pointers to all records containing a particular word. A complete new index is required whenever new cards are added to a stack; indexing of 1.2 Mybtes of data in 1100 records took twenty minutes; therefore "The speed of indexing is no serious problem" say the authors. I find it hard to agree with that statement.

They continue:-"Hypertext is a very promising medium... navigating associatively through a system may sounds very attractive indeed but... someone first has to devise all the links between buttons... complicated systems may require a man-year or more per Megabyte".

This provision for associative linking is of course claimed as being the major innovation introduced with hypertext, but if this order of effort is needed to achieve the benefits of links, it would be nice to see an example in the form of a genuine application of links, usefully applied to downloaded data.

Yet another old chestnut receives yet another airing by its major protagonists Donald King and Jose-Marie Griffiths who have been struggling with it for years. I am referring to their piece "Indicators of the use, usefulness, and value of scientific and technical information".

Back in 1976 the ongoing support accorded to research on the value of information provoked a response from D.J. Urquhart, formerly Director General of the British Library Lending Division. In a letter to the *Journal of Documentation* he said:-"Further grants no doubt illustrate the triumph of hope over experience. It is time for the British Library to support some research on the economics of economic research beginning by asking whether any of it has produced any results of practical value".

Since then there have been at least two good reviews of this topic - A.J.Repo in *JASIS* 40(2), 68-85, 1989, "The value of information: approaches in economics, accounting, and management" and Gary Bird in *Law Library J.* 81(2) 191-201, Spring 1989, "The economic value of information".

Repo cites 77 other articles but concludes "This review provided no new, useful, tool for measuring the value (exchange or use value) of information in practice".

Bird concludes "As librarians, we need to do a better job of understanding the cost and value of the information resources we manage. Only then will we be able to demonstrate effectively the value of these resources to the individuals and institutions we serve".

The importance of establishing some yardsticks in this field can hardly be over-estimated. Is Urquhart's advice, which amounts to "forget it" justified, or have King and Griffiths shed some new light on it?

The answer is that they have not. However they have succeeded in reinforcing the same message that they have implicitly communicated several times already. It is that the best that can be done to evaluate information, or at least scientific and technical information, is to get at it indirectly by estimating the cost of time saved in consequence of its acquisition and use. This theme, or variations of it, is the basis for the "value" figures provided in their article.

For example under "what scientists and engineers are willing to pay for information", King & Griffiths say that in the late 1980s they (those employed by companies and government agencies in the US) spent an average 299 hours annually in acquiring and reading journals, books, technical reports and other documents, "costing" \$9120. The estimated "cost" of the time saved in avoidance of unnecessary research, modification of research etc., is up to 15 times greater.

The reason why I have put "cost" between quotation marks is that this is the cost of their time, but there is a weakness in this measure. "Time is a scarce resource" say the authors and "the choice to spend time reading is an indicator of the "value" (author's quotation marks) of the information read. This is a rather intangible measure but it is certainly better than no measure at all.

TRENDS AND COMMENTS

Isotype

Michael Twyman, Professor at the University of Reading's Department of Typography & Graphic Communication, looked at me sadly the other day when I visited his almost unique faculty. Obviously my education had been sadly neglected. Isotype? Never heard of it.

Perhaps you haven't either. It's not in my *OED*, or in *Chamber's Encyclopaedic Dictionary*.

Edward Tufte, doyen of US graphics, and author of a wonderful book *The visual display of quantitative information* enthuses about William Playfair (1759-1823) an English political economist, one of the inventors of modern graphics design. He also reproduces Minard's famous *Carte Figurative* showing Napoleon's route to Moscow. The width of the line indicates the size of the army of 422,000 men who crossed the River Niemen going East, and the 10,000 who remained when they re-crossed it the following year. Tufte provides many other examples of graphical excellence but of Otto Neurath and Isotype not a word.

Neurath was born in Vienna in 1882. After war service and teaching at Heidelberg he became involved in housing, planning, and economics. He moved to the Hague in 1934 and worked on to visual education. In 1940 he left for England, was interned for a short time, released, and founded the Isotype Institute Ltd with his wife Marie. He died in 1945.

As Twyman says (In *Graphic communication through Isotype*, Department of Typography, University of Reading, 1975):- "Neurath believed that in certain situations pictures could speak more clearly and with a greater chance of their message being remembered, than numbers or words... he saw the need to establish a set of conventions to make communication easier and more effective". Isotype is an acronym for the International System of Typographic Picture Education.

Twyman continues:- "picture language... is less emotive than verbal language because the images used have not acquired the overtones words have acquired... the value of picture language has since been demonst-

rated in certain fields internationally, such as road signs and the symbols associated with international travel".

A new idea for shifting financial information rapidly

Perfect Information Ltd (+44 (0)71 454 0666) have recently introduced a service "to emulate the best collection of company and financial documents both in terms of comprehensive and historical perspectives".

What they have reasoned is that the way to deliver the large volume of worldwide financial information that is generated day and night is to index it immediately and deliver it to a subscriber ready for use when he/she arrives in his/her office in the morning.

You might call this a brute force service. They scan the stuff, store it in an optical disc jukebox, and shoot in down the user's dedicated line to his dedicated work station. When retrieved it looks rather like a fax page at better resolution. The material which is handled by the minute includes the Stock Exchange's *Company Announcements* averaging over 250 per day, and cuttings from major newspapers.

However there is more to it than brute force. A user is supplied with a thesaurus, and Perfect Information's indexers, working 24 hours a day, use it to add preferred terms to every item. If you want to, you could search the delivered material on your own workstation daily from your stored profile.

The workstation includes an A4 size monitor which will be displaying a few megabytes of data when you are looking at a screenful of press cuttings. Perhaps an efficient data-compression system could reduce this by 5:1 or more. It seems to me that you are going to need a lot of storage even to handle a day's delivery. As well as the material already mentioned you will be receiving *Investext Research Reports*, *Extel cards*, foreign company reports and accounts, and bond prospectuses. The Stock Exchange's microfiched company information service data back to 1982 is now being added.

Utilisation of this mass of material will require some thought if the potential value of it is going to be realised. Presumably some users within the subscribing organisation will organise a search profile so that they extract a manageable scannable/readable amount of material daily. When you hear about the price in a moment, you may think that most organisations will probably want to cumulate the stuff.

They will need to decide how much "buffer" storage they need in a workstation (one day's worth, a week's worth?), and how many days, weeks, or month's worth should be held in central storage. Would it be better to have it all delivered into central storage to be received, organised, searched etc., by the Information Department?

The basic fee, including a VAX Work station with peripherals is £15,000; this covers most of the material listed earlier. Alternatively the service can be arranged on a pay-as-you-go basis. To transport this amount of data at the required rate a private line (such as Megastream in the UK) is needed at the subscriber's expense. The service is currently installed at 37 UK test sites.

Telecomms controversy brings down a government

A succession of incidents to do with the Flemish (Dutch-speaking) and Walloon (French-speaking) inhabitants of Belgium ended with the resignation of Wilfried Martens, the Prime Minister, over the award of a

\$300M contract for telephone exchanges awarded by the Flemish telecomms minister to Flemish companies.

Martens was faced with the difficult task of being even-handed with respect to the two communities who are at loggerheads over a number of issues. After resigning he formed a caretaker government pending elections.

Black humour from the Soviet Union

SovData Dialine (See under News above) includes an extract from *Soviet Press Digest* with its press release. It came from the magazine *Ogonyok* published just before the coup of August 19th 1991. The author, Grigory Oster, suggests that the following items might be suitable problems for school mathematics textbooks (communist ideology is all-pervasive but maybe these jokes have lost their impact having already been overtaken by events).

"The line for sausages stretches for 200 metres, the line for butter is 50 metres longer than that for sausages, and that for bread is just one-fifth of that for butter. How many metres in the line do you have to cover if you want a sausage sandwich?"

"A woman road-builder earns 6 rubles a day. A team of 5 woman workers dig 15 metres of trench a day. How long a trench should the team dig to earn as much as a team of 5 hookers earns a night if each hooker gets \$100 for visiting a foreigner in a hotel, and the dollar fetches 30 rubles on the black market?"

"The communist party organizer of a tractor works told a closed-door party meeting that vodka had been put on sale in a shop 3 Kms away. Communists started from the meeting for the shop at a speed of 20 Km per hour. Five minutes later non-party workers heard the news and they started from the shop at a speed of 40 Km per hour. Who will be first at the counter?"

Image Databases

Electronic representations of Pictures, or *Images* - the more general word which seems to discount artistic qualities - have come into their own; they provide an excuse for devising elaborate technology with which to capture, store, compress and reproduce them. Software for fiddling about with images generally, is available in abundance.

Child! do not throw this book about
Refrain from the unholy pleasure
Of cutting all the pictures out.
Preserve it as your chiefest treasure...

...wrote Hilaire Belloc. But pictures are not the chiefest treasure in the world of indexing and retrieval. Collections of pictures of most kinds such as modern art, old masters, historical events, great battles, Roman architecture, country estates - you name it - present a severe retrieval problem.

Microcomputer image-filing software products are quite widely advertised. The indexing-provision usually consists of a text-searchable portion of the frame containing the image, set aside for descriptive text. Thus the words "Pink Elephants" might be used in a frame containing an illustration of such animals. That illustration would be retrieved as a "hit"

if those words were typed and the system included the means of matching query words with frame words.

Some sage said:- "Simplicity is the most deceitful mistress that ever betrayed man". It would certainly be highly deceitful to use the above-mentioned elephants as an example of the general simplicity and effectiveness of image indexing and databases.

In the course of assessing image processing projects on behalf of the British Library (who are supporting a number of them in the UK) I noted that there are two major possible forms of image indexing - manual indexing and automatic content recognition.

On the face of it manual indexing is much easier. The image is stored in association with a record containing a description put there by an indexer and is retrieved by posing term questions. This is feasible for small collections of images each containing a relatively small number of objects. However the number of objects in many kinds of pictures, their positions, actions and interactions, abstractions and circumstances which may be associated with them may lead to an almost prohibitively large number of possible ways of describing them.

This is one of the incentives for devising automatic content-recognition systems. An enormous research effort, particularly in connection with robot vision, is being devoted to this area. There has been some progress with systems able to accept a "question" consisting of an image resembling the required image, input for pattern-matching against pictures in the database. At present this appears to be feasible for matching a simple picture against a set of rather similar pictures.

Other research is concerned with the recognition of sets of features which go to make up a picture. Problems in this area are on a par with continuous speech recognition and they are being overcome at about the same rate - very very slowly.

Say a system is confronted with the questions "retrieve all pictures containing cars" and secondly "retrieve pictures of water-gardens". Conceivably a car could be specified in a manner unique enough to distinguish it from any other object; but that is difficult enough since there must be dozens of possible attitudinal positions which might be assumed by the same car.

But it is almost impossible to imagine a machine capable of interpreting "water-gardens", in whatever way it is input, or of imparting sufficient knowledge to a machine to enable it to recognise the "water-gardens" abstraction-image even if it "understood" the question. No doubt "victorian water-garden" would be more difficult by several orders of magnitude.

CD-ROM XA

The CD-ROM XA (Extended Architecture) coding and file structure format provides for the addition of sound, graphics, and both still and motion video to the CD-ROM format. The specification is based on the CD-ROM "yellow book" standards and the CD-I "Green Book" standards. Accordingly XA discs will be playable on XA or CD-I drives, and their content will be processible by most of the PCs with which CD-ROM drives are used.

The XA specifications come in three releases covering audio, images and still video, and motion video. Philips showed the CDD 167 board at the Online Exhibition, priced at £325. When this board is plugged in to a 286, 386, or 486 PC, the PC will be able to process CD-ROM discs incorporating the first XA release - discs with sound. Sound is encoded in a type of

pulse coding (digitisation) with compression called ADPCM, interleaved with CD-ROM data. The board will output decoded sound to a headphone socket or to stereo connectors for an external stereo amplifier. A PC with the board in place does not affect the PC's ability to process ordinary CD-ROM disc data.

Typical applications include background music or speech played simultaneously with text for spoken help or training purposes. Audio mixing facilities are included on the board, so quite separately from sound decoded from a disc, sound could be added from locally stored ADPCM-encoded sound files under software control from the PC host computer.

CD-ROM Growth

According to *The 1991 CD-ROM drive marketing report* provided by the Disk Trend Company, 820,000 CD-ROM drives were shipped in 1990, of which over 320,000 were shipped in the US. Hitachi has nearly 30% of the market.

BOOKS RECEIVED

The comments which follow fall short of "Reviews". I have selected a few of the many books received for special mention.

Rafael C. Gonzalez & Paul Wintz.
Digital Image Processing.
Adison-Wesley, Reading MA 1987. ISBN 0-201-11026-1. 503 pages.

Don Pearson (Ed).
Image Processing.
McGraw Hill. London & New York 1991. ISBN 0-07-707323-1 314 pages.

These are authoritative books for those seriously interested in the subject. The maths is formidable in the first and tough in the second. For specialists some of it must be digested, but for others the subject can be grasped by ignoring most of it. Both books are full of figures and illustrations.

Gonzalez is at the University of Tennessee and Wintz is at Purdue. Gonzales's definition of "Image Processing" is obviously just that - transforms, enhancement, restoration, encoding, segmentation, and representation. The fact that the book was published in 1987 matters very little.

Pearson edits chapters by 14 UK authors from the Universities of Essex and London, British Telecom and BBC research departments, and the Independent Television Commission.

Similar ground to Gonzalez is covered but much more briefly. Most of the book is about systems and applications - motion estimation, HDTV, pattern recognition, modelling, architectures and software, compression and transmission. Specialists excepted, most people will find this to be the most useful book.

A.E. Cawkell (Ed).
World Information Technology Manual.
Elsevier Science Publishers. Amsterdam & New York 1991.
ISBN 0-444-89314-8 (2 volumes). About 1100 pages.

This book is really the second edition of a 1986 book of which a reviewer said "jam-packed with solid, no-frills, technical information; a remarkable overview of what IT is all about" - and who am I to disagree with that? Actually I do disagree with it because both that book and the 1991 books have almost as much non-technical information as technical. I consider the non-technical part more important - it is about management, sociological and political aspects etc.

The main reason for the second edition is the obsolescence of the first. It has been completely revised and several of the chapters are about activities which had barely been thought about in 1986 - HDTV, Multimedia, Expert Systems, Desktop Publishing, and so forth.

The books comprise an Abbreviations & Acronyms, Glossary, and Index section, common to both volumes. Volume 1, written by Cawkell, covers Computers, Telecommunications, and Information Processing. Volume 2, written partly by Cawkell covers Systems & Services. The remainder is by 11 different guest authors about a variety of subjects.

Ithiel de Sola Pool.

Technologies Without Boundaries.

Harvard University Press. Cambridge MA and London 1990.

ISBN-0-674-87263-0. 283 pages.

In the Preface, Professor Eli Noam of Columbia University explains that he edited the draft of this book when Pool he died in 1984. Pool was the Director of the research program on communications policy at MIT and a notable communications scholar who wrote several award winning books. Noam says about the book "Its scope is the world, culture, and the future, and its themes are as fresh and as relevant today as when Pool wrote about them".

The range of the book is evident from some of the chapter headings - "From mass media revolution to electronic media revolution", "International information retrieval systems", "Do poor countries need state of the art technology?", "Telecommunications and the projection of national power", and "The future of the book".

Pool takes rather a gentle approach to controversial topics and describes how there is a certain inevitability about the course of many developments. For instance he does not support the idea of a commercially driven cultural imperialism - what he calls "the standard intellectual critique of commercial mass culture".

He takes the opposite view to Herbert Schiller (communications professor at the University of California at San Diego) who says in his book "*Information and the crisis economy*":- "It is a mistake to believe that the changes required to overcome disparities in human existence will be facilitated by developing communications systems... existing differentials and inequities will be deepened... Only after sweeping changes inside dozens of nations... can the possibility of using new communication technologies for human advantage begin to be considered".

On "Why American television succeeds abroad", for instance, in spite of barriers of language, barriers of social support, and barriers of culture, Pool rejects the idea that "poor countries do not have a choice and that American or other foreign programmes are in some way forced upon them". He points out that American TV is geared to producing what the American public wants. "Once a program has been produced, the costs are sunk so the producers will sell rights for whatever the traffic will bear... a typical TV drama episode might cost \$200,000 to produce in 1980s". But the

average charge to foreign TV companies for a half-hour episode "varies between £4200 in Great Britain and \$20 for Haiti".

Pool airs all kinds of other interesting ideas - you will find this to be a fascinating book.

Eugene Garfield.

Creativity, delayed recognition, and other essays.

ISI Press. Philadelphia, 1991. ISBN 0-89495-085-1. 385 pages.

Garfield is the president of ISI and this is the 12th volume in the essay series. As before, the essays appeared previously in *Current Contents*. In the Foreword, Roald Hoffman says "Gene certainly has a way to a man's heart". Indeed he has as I have found out during the last 25 years. Once again his diversity of interests is expressed in his essays.

For example in "Art and Science", Garfield says "Despite C.P.Snow's well known construct regarding the "two cultures" of science and the humanities and the alleged gulf of "mutual incomprehension" separating them, there *are* aspects of art and science that intertwine and overlap". The essay continues with a review of historical artist/scientists from Leonardo da Vinci to Galileo and, comparatively recently, Charles Wilson Peale of the revolutionary period who "after achieving success as an artist, made a mark as an inventor".

Garfield's interest in the saxophone prompts the piece "How Rudy Wiedoeft's *Saxophobia* launched the saxual evolution" and leads to a guest essay about Wiedoeft who is evidently "virtually unknown to audiences today". Also unknown is why I was once involved in Gene's purchase of a saxophone in Luxembourg (or was it Finland?) whence it was carried as "personal luggage" to Philadelphia via London Airport. Together with other saxophones I believe it was later stolen from his apartment.

However most of the essays continue to have something to do with Citation Indexing. One of the most interesting is "Lyme disease research uncovers a case of delayed recognition: Arvid Afzelius and his successors". Gregor Medel was one of the best known cases of DR (although there is some evidence suggesting that recognition of his work was not, in fact, delayed). Garfield invited Bjorn Afzelius, Arvid's grandson, to contribute a note for publication in *Current Contents*.

Bjorn noticed that his grandfather's work concerning a circular skin rash, which he identified and reported in 1909, was not much cited until 1983. The rash is named after a small town in Connecticut and was named "Lyme disease" following the infection of a number of children in Lyme during 1975. It is transmitted during a stage of the tick's life cycle. From that time onwards Arvid's work was recognised and citations to it increased steadily having been zero in 1974.

Another of Garfield's interests is the popularization of science - a subject featured several times in *Content Contents*, but not, it so happens, in this volume. However the subject re-appears in CC of September 2nd 1991 co-incidentally with the birth of *Science Times* - a section of the *New York Times* on Tuesdays, and a Gallup poll revealing that 27% of Americans (which probably means a similar percentage of Europeans) believe that the sun revolves round the earth.

Tony Cawkell.