index terms for searching MEDLINE on compact disc as I do guiding them around the vagaries of the library catalogue. My colleagues and I are, in fact, slowly adapting ourselves to the fact that what we have been doing is storing and retrieving things—books, journals, papers, etc, while what our customers often want is not things, but information. Up till now, however, much of the revolution which is leading to the 'death of the book' and the end of the scientific journal, has consisted of books and journal articles. I wonder if there is any evidence of Caxton or Gutenberg circulating illuminated manuscripts on 'the death of the illuminated manuscript' during the last communications revolution? I also wonder if I would have come across Dr Clayden's opinions if he had circulated them by electronic mail rather than in the form of a journal article.

More seriously, a cause for concern is the common delusion among doctors that because information is going to become available in an electronic form it is somehow going to be 'free'. A quick glance at the organisations currently involved should convince them that this is not the case—DIALOG, which is a subsidiary of the Lockheed Corporation, Pergamon Press, EM-BASE which is owned by Elsevier, and DATA-STAR which is owned by the Swiss Radio Corporation! It seems to me to be much more likely that those hospitals and medical schools which can make a major financial commitment to information systems will end up being much better served than they are at present, but that isolated specialists working in poorer parts of this country, let alone those in Bulgaria or Bangladesh, are going to be considerably more deprived of information than they are at present. Much of the technology already exists, but we do not have the staff to offer it. Brophy tells of a new polytechnic lecturer who had arrived from a commercial research organisation in which he had had a personalised publication bulletin every Monday, with all the documents he ticked in it delivered to his desk by Friday, and a regular visit from his information officer to make sure the document supply was on target.² The polytechnic had the technology to do the same, but it had an average of one subject librarian to 1100 readers, and is very unlikely to make the investment in people, as well as in equipment, necessary to take advantage of the technology.

One thing which puzzled me was Dr Clayden's implicit assumption that he is going to retain his functions, and even his title, during the information upheaval he predicts. The 'death of the book' surely implies the abolition of the 'reader in paediatrics'. Even if he changes his title to that of the less euphonious 'VDU-scanner in paediatrics' it seems to me to be much more likely that I will be able to stagger on as a sort of glorified juke-box attendant, but that many of Dr Clayden's functions can be taken over by an Expert System, on the one hand, and by far lower paid counsellors on the other. I hope and expect that he and I will get safely through to retirement all right, but I have doubts about our successors.

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Dr Clayden comments:

I would support Mr Guha in his defence of the librarians' future. I was merely suggesting in my brief article that the medical library as a place might disappear. The librarians' role of custodians of information systems and experts in retrieval is already taking over from the role of guardians of books. We should not lose sight of the liberation from memorising facts which the accessibility of massive databases is increasingly allowing. I would imagine most patients would prefer their doctor to be expert in using data to solve their problems than merely being able to retrieve from their own memories the list of facts about a particular illness. Similarly, the librarian who is expert in retrieval of information is more vital than those expert in the effect of climate on the degeneration of books and manuscripts. It is inevitable that I should use a journal to communicate my opinions at this stage as the availability of electronic newsboards has been priced out of the market so far. Similarly, I cannot imagine that Bell attempted to phone his friends about modifications to his invention in the early years either.

I cannot agree in the long term with Mr Guha's anxiety about the developing world. An out of date book is perhaps as dangerous as no book at all. How many remote areas of the world are unable to receive radio broadcasts now? It is therefore easy to foresee the future of sonar powered computers receiving satellite transmitted signals to update databases and expert systems through the world.

On the personal side, I do have to admit to an early fear of books bred (or is it bread) as a result of a degree of dyslexia in childhood. Although the telephone and word processor may be our mode of communication, I welcome the humanity which shines through these contacts by friendly and supportive librarians as much as Mr Guha and I will value that of the future doctors into whose hands we will inevitably fall. Let up hope that their kindness and wisdom are also strengthened by all the powers of science and technology available in that hopefully distant time.

Squatting and urinary tract infection

SIR,—We read with interest the article by Hellström *et al* on the association of urinary symptoms and previous urinary tract infection.¹ Hellström *et al* found urinary tract infection in 15 (37%) of 41 children with squatting. We agree that urinary tract infection is common in children with squatting.² In the past 22 months we identified 16 children who presented with squatting at least once per week. The average age at our assessment was 77 months, range 47 to 126 months. There were 15 girls and one boy. The table shows the frequency of chronically holding the urine to the last minute and urinary tract infection in these children. None of the children had encopresis, a gait disturbance, a palpable defect in the lumbosacral spine, or an abnormal neurological examination.

Nine of the 16 children in our series had either a retrograde voiding cystourethrogram taken or cystoscopy performed. Four children had mild vesicoureteric reflux, two had trabeculated bladder (one also had a bladder

The frequency of chronically holding the urine to the last minute and urinary tract infection in children with squatting (results are number (%) of children)

	Frequency	
	Present series (n=16)	Hellström <i>et al</i> ¹ (n=41)
Chronic holding of urine	11 (69)	
Urinary tract infection	13 (81)	15 (37)

diverticulum), and one had urethral stenosis. Only two children had normal results on these studies and both of these children had a history of chronically holding the urine to the last minute. Four of the five children who did not hold their urine to the last minute had abnormal results on the studies.

Hellström *et al* questioned whether symptoms of bladder dysfunction or urinary tract infection come first and whether they develop in a causal relationship. We believe that both urinary tract infection and squatting develop consequent to a number of clinical conditions including chronically holding the urine to the last minute, detrusor sphincter incoordination, or urethral obstruction. Chronically holding the urine to the last minute may become a habit in some children and should be differentiated from children with urgency who do respond promptly to the signals of the need to void. In the former case, parents typically observe these children dancing around, fidgeting, or holding themselves, whereas in the latter case, the sensation comes on suddenly without any warning.

Instructing children to respond promptly to the signals of the need to void, take their time to completely empty the bladder, and void at least every two hours during the day should be part of the treatment plan for children with either urinary tract infection or squatting.

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Gastro-oesophageal reflux and the lung

SIR,—I read with great interest the annotation by Professor Simpson and Dr Hampton about the inter-relationships between respiratory disorders and gastro-oesophageal reflux.¹ The authors did not mention an important group of children in whom respiratory disease and reflux may coexist, namely those with cystic fibrosis. The association between these conditions first came to light 10 years ago when two children were reported in whom gastro-oesophageal reflux disease with recurrent aspiration had been diagnosed, but who were subsequently discovered to have cystic fibrosis.² A study from 1985 described a questionnaire survey of 65 patients with cystic fibrosis in whom one quarter reported heartburn and/or regurgitation.³ A large scale, prospective study of the incidence of reflux in cystic

fibrosis patients using intraoesophageal pH monitoring is prevented by ethical considerations, but in a small study of 10 newly diagnosed infants with cystic fibrosis, Dab and Malfroot found significant gastro-oesophageal reflux in all 10.⁴ These authors suggest that as reflux was documented even in those patients without respiratory symptoms it could not be blamed on chronic cough, and may even represent a primary defect of oesophageal motility in cystic fibrosis. Published data about oesophageal motility in cystic fibrosis are scanty, but there is some evidence that transient relaxations of the lower oesophageal sphincter, which are not accompanied by oesophageal peristalsis, and therefore deemed inappropriate, are commoner in cystic fibrosis patients with gastro-oesophageal reflux than in reflux patients without cystic fibrosis (data presented by F Santamaria *et al* at the 10th International Cystic Fibrosis Congress in Sydney, 1988).

The importance of coughing and physiotherapy in inducing reflux in cystic fibrosis is probably underestimated. The statement by Professor Simpson and Dr Hampton that 'although large swings in intrapleural pressure induced by respiratory efforts have been thought to favour increased gastro-oesophageal reflux, there is little evidence that this actually occurs . . . ' may not be true in cystic fibrosis patients. From our knowledge of the pathophysiology of gastro-oesophageal reflux, forced expiration and coughing undertaken during chest physiotherapy may cause a rise in the thoracoabdominal pressure gradient sufficient to overcome the antireflux barrier of the lower oesophageal sphincter, and the antigravity effect of postural drainage in the 'head down' position would also be expected to exacerbate reflux. In a study in 10 young patients with cystic fibrosis investigated with 24 hour oesophageal pH monitoring during which all underwent three periods of chest physiotherapy, eight were found to have pathological reflux, and in six physiotherapy provoked reflux.⁵ Although in my experience

intraoesophageal pH monitoring is not well tolerated by patients with cystic fibrosis with established pulmonary disease, this is an area which merits further study.

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Paracetamol suppositories after cardiac surgery

SIR,—We read with interest the article by Hopkins, Underhill, and Booker concerning rectal absorption of paracetamol.¹ We have performed a similar study on 20 children, mean age 3.75 years (range 0.28–10.58 years), giving paracetamol suppositories (Macarthy Laboratories Ltd) when they became feverish, four to six hours after the cessation of cardiopulmonary bypass (11–14 mg/kg body weight). Rectal temperature was monitored continually and plasma paracetamol concentrations were measured every hour for four hours.

The minimum therapeutic plasma paracetamol concentration for an antipyretic effect is

66 µmol/l.^{1,2} In 18 of our 20 patients the paracetamol concentration never exceeded 25 µmol/l (the lower limit of detection in our assay) and reached only 35 and 29 µmol/l (at two hours) in the remaining two patients. In 10, K-Y Lubricating Jelly (Johnson and Johnson) was used to aid insertion of the suppositories, but this did not effect absorption. There was no fall in rectal temperature over the four hour period.

We analysed the batch of suppositories and found an acceptable 92% bioavailability. As doses of 10 mg/kg have been shown to reduce temperature in preoperative children,³ we suggest that the poor absorption must be due to patient factors, such as an ileus or interference from anaesthetic drugs. The study by Hopkins *et al* would support this.¹ Although similar doses were used, the plasma paracetamol concentrations were higher (albeit subtherapeutic). As the suppositories were given much later (24 hours after operation), it suggests that the effects of some drug or unknown factor could be wearing off. It would be interesting to re-examine these patients one week later. Whether poor rectal absorption is specific to cardiac surgery and whether other drugs are similarly affected, is uncertain, but needs careful evaluation.

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