

patient's brain tumour. The simulator not only accurately depicts the anatomy, allowing doctors to rehearse complex brain surgeries, but also simulates the sense of the tumour's resistance as it is being removed and can even transmit the sensation of an instrument tip vibrating.

With ever-advancing medical technology and a trend towards minimally invasive procedures, simulators will surely play a critical role in bridging the gap between surgeons and technology. With this surge in the use of simulators, the medical simulator industry is projected to grow from currently a few hundred million dollars to annual market estimates worth about US\$ 1.5 billion by 2012. Furthermore, with the recent news of decline in malpractice

claims for simulation-trained clinicians resulting in a 35% decrease in premiums for anaesthesiologists and obstetricians, many hospitals and physician associations may advocate mandatory simulator training. In the next decade, it would not be an exaggeration to expect a patient to question their surgeon as to what was their simulator score for a particular procedure before performing the operation.

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Letter from Chennai

TRAFFIC HAZARDS OF CHENNAI

Chennai is to have a 'Road Accident Data Monitoring System' before long. The Tamil Nadu Road Sector Project, financed through a loan from the World Bank, will have a web-based application on which every reported accident in the city will be recorded and placed on a map. This will enable the observer to locate areas where accidents happen repeatedly, and the traffic flow pattern to be studied and reasons for the accidents to be analysed, so that long term steps can be taken to minimize such accidents. Loans, even those from the World Bank, must, I presume, be repaid some time. Common sense tells us a number of causes for accidents that are clearly recognized, but nothing is done about them. Why not fix what is already known, instead of spending time and money on finding some more problems for us to fail to fix?

In a couple of my recent letters, I mentioned the fact that Tamil Nadu has more deceased organ donors now than a year ago. Having devoted much of my working life to establishing renal transplantation in India, including the use of deceased donor organs, I should be happy. However, what makes me sad is that so many of these donors die unnecessarily, partly from their own error of not wearing crash helmets when riding two-wheelers, but largely due to the fault of our government. Many accidents occur because a two-wheeler encounters a pothole in the road, and the rider is thrown off balance and falls, sometimes injuring his head, sometimes falling in the path of a lorry and getting crushed under its wheels. Are not our government, the local municipal corporation and the people behind these organizations guilty of culpable homicide when a young person dies because of faulty maintenance of roads?

When I was a schoolboy, a road, once tarred and black topped, was supposed to last for 12 years before it needed re-laying. Technology should have advanced now. Further, in those days goods were transported through the city on bullock carts that had iron hooped wooden wheels and no springs, so the wear and tear of the road was far greater than it is today. All our carts are now on pneumatic tyres. Why then does the road, once laid, succumb to the very first rain that pounds it? Clearly, the work is substandard.

I have seen tar roads in cities elsewhere that carry far more traffic than do ours, and they last several years longer in good condition. The contractors who lay our roads today apparently believe in planned obsolescence.

There has recently been some good news for Chennai-dwellers. Several Corporation councillors raised the issue during a session of the council a few days ago. The leader of the opposition pointed out the obvious: that there must be something wrong with the specifications for road laying, if the road was accepted as up to the mark and yet got pot-holed by the first rain it encountered. Following the old wisdom that the best way of shelving a problem is to refer it to a committee, the Mayor announced that he would form a committee with experts from the Indian Institute of Technology and the Anna University (Tamil Nadu's Engineering University) to look into the specifications. A retired Deputy Director of the Highways Research Station was quoted as saying: 'There is no compulsion on the part of the contractors to do a proper work in laying of road.' He felt the specifications are perfect, but there was no care in execution. I understand him perfectly. All our programmes for delivery of healthcare are excellent on paper. The only problem is that they never get done properly.

The rot on our roads does not end with the roadway. Our city has overwhelmingly more pedestrians than motorists or two-wheeler riders. Whenever the Corporation 'improves' the city roads, pedestrians get a raw deal. Every flyover has a road beside it for those motorists who do not go over the flyover, and the combined width of the flyover and this road alongside adds up to more than the original width of the road. As the traffic increases on many roads, the Corporation widens it. The extra width comes from the pedestrian walkway. What remains of the walkway cannot be used for walking anyway. Sundry hawkers spread their wares on the pavement. The High Court decreed a year ago that there should be no hoardings, and accordingly a large number of advertising hoardings were removed. Apparently this embargo does not apply to politicians. The pavements are taken over by large billboards indicating the undying love and loyalty of some minor politician for the great leader of his party, whenever any

special event occurs in the life of that leader. Another reason why we of Chennai do not walk on pavements, and thereby risk our lives trying to share the roadway with the motorists, is that the pavement is deliberately raised a foot and a half above the road, and the pedestrian must climb all the way up, and then jump down at the next driveway. The wear and tear on the knees must be an orthopaedic surgeon's delight. Knee replacement surgery is on the rise in Chennai.

Now let me tell you a curious fact. These pavements, which are not used anyway, are tiled, and the tiles, in perfect condition as no pedestrian ever trod on them, are changed every few months. Why? This is a suitable case to apply the Right to Information Act.

Ever since we gained Independence, we have accepted a socialistic pattern of government, and have surrendered to the party in power the right to exercise authority over us. In return, we expect that it will benevolently arrange public life in a way that enables us to live a reasonably comfortable and healthy life. We have by and large been passive, and accept what the government does for us without resistance. When Shakespeare wrote '*still have I borne it with a patient shrug, for suff'rance is the badge of all our tribe;*' he might have been thinking of us. Sixty-two years after Independence, our government has been unable to discipline autorickshaw drivers to follow the meter installed on their vehicles to determine what they should legitimately charge for their services. We have been unable to eliminate from our cities our hordes of mosquitoes and all the diseases they bring. And yet, time and again, we elect the same band to rule over us and keep us in our misery. The people get the government they deserve.

WHAT PRICE SNAKES?

Many of you might have used polyvalent snake venom serum to save your patients. Have you given a thought to where that came from? There still are snakes in the forests of Tamil Nadu, and they are caught and made to yield their venom into a glass. This is then sold to all the institutions in the country that manufacture anti-snake venom serum. The venom is injected into horses, and forces the immune system of the horse to produce the antibodies that save our lives. Who persuades the snakes from the forests to donate their venom for this benign purpose?

A tribe called the Irulas, racially Negritos like the aboriginals of the Andamans, were forest-dwellers. They used to live in the

forests of Tamil Nadu. They lived off jungle plants and animals, and also sold honey, beeswax and firewood to villagers to get some village produce in return. The Forest Protection Act of 1980 affected their traditional way of life. They could no longer legally obtain a living from the forest. They are especially skilled at catching snakes and rats, and their services were of use to farmers to rid their fields and granaries of rat infestations. This was not much of a livelihood, but it enabled them to subsist. Romulus Whitaker, the brain behind the Chennai Snake Park and the Crocodile Bank, helped them to form a cooperative society. He has given them a section of the Crocodile Bank to keep snakes and extract venom. I understand they now sell snake venom to all institutions producing anti-snake venom serum in the country. Irulas are licensed by the State Forest Department to catch four species of snakes—the cobra, Russell viper, saw-scaled viper and krait. These snakes are bought by the Society, and kept for a month in mud pots. Venom is extracted by making the snake bite into a tight membrane covering a glass. After 4 such extractions at weekly intervals, the snakes are released into the wild. During their captivity, the snakes are not fed, as they can subsist that length of time without feeding.

Politics and divisions creep into every walk of life. The Irula Snake Catchers' Industrial Co-operative Society buys snakes from the Irulas, exhibits them in its corner of the Crocodile Bank, and extracts venom to sell to the King Institute. The Irula workers of the Society use a pole and their bare hands to pick the snakes out of the pot, and make them bite into the membrane stretched over the collecting glass. This is one of the popular attractions at the Crocodile Bank. The problem is that the Society pays an average of Rs 200 for each snake (more for a cobra or a Russell viper), but some of the Irulas now demand Rs 2000. Some Irulas, residents of a village called Tiruporur, have caught a number of snakes and are holding them in captivity in mud pots in their homes while haggling with the Society over the price. Their neighbours are uncomfortable about the idea of living next door to a houseful of venomous snakes held in such fragile containers, and so would I be. Considering the risks of catching and handling these snakes, and the value to humanity of the anti-snake venom serum, I feel a higher price would be well justified, and hope the Society will see reason.

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