

Smoking and cataract

The article on 'The public health impact of tobacco' by Prakash C. Gupta (*Curr. Sci.*, 2001, **81**, 475–482) made interesting reading. I would like to share information which I feel would supplement the developments covered by the author and which would be beneficial for all readers of *Current Science*.

Tobacco smoking is known to cause early cataract. The link between smoking and cataract has been established by a series of epidemiological studies, first in Edinburgh, then Oxford, London and the United States.

In India, research at Sankara Nethralaya in collaboration with Stanley Medical College, Chennai has shown chronic cigarette smoking to be one of the important causes for the early onset of cataract. The attributing factor is the accumulation of cadmium in the eye lens of smokers. There are also reports on the accumulation of cadmium in the blood and certain other tissues and even in the milk of mothers habituated to tobacco smoke.

Cadmium is as toxic as mercury in denaturing the essential proteins in blood and tissues. Cadmium is mostly bound to haemoglobin in the blood and affects the oxygen delivery to the tissues. Moreover, cadmium can replace other divalent elements such as copper, zinc and selenium, thereby impairing the biological functions of these minerals containing enzymes such as superoxide dismutase (SOD) and glutathione peroxidase.

Our study has also established low levels of erythrocyte SOD in cigarette smokers and tobacco chewers (particularly women chewers of tobacco) paralleled with significant decrease in zinc content, which was restored by supplementing their diet with oral zinc. These findings have been published in *British Journal of Ophthalmology* (1995, **79**, 199–201; 202–206) and *Indian Journal of Pharmacology* (1998, **30**, 413 and 2001, **33**, 100).

Besides, smoke from cheap fuel used for cooking in poor household and the

environmental automobile smoke can also damage the eye lens. It is reported that the trace elements and the hydrocarbons present in smoke produce reactive oxygen intermediates, which in turn affect the lens. Even passive smokers can be affected. Recent studies have shown that smoking is a major risk for age-related macular degeneration, a disease which causes visual impairment during old age, for which there is no medical treatment.

It is definitely advisable to extend the ban on smoking in public places and pollution control in the interest of public health.

K. N. SULOCHANA

*Biochemistry Research Department,
Sankara Nethralaya,
Vision Research Foundation,
18, College Road,
Chennai 600 006, India
e-mail: drkns@sankaranethralaya.org*

Why shouldn't non-residents pay larger conference registration fees?

The following views are in response to the letter entitled 'Why should non-residents pay more conference fees?' by D. Balasubramanian (*Curr. Sci.*, 2001, **81**, 435). The letter questions the practice of non-residents being charged a greater registration fee at conferences compared to resident Indians. Let us extend the question further. Why should participants from private industry (like myself) pay more than participants from government or R&D labs, as is common in engineering conferences? Why should non-students pay more than students? On a related line, why should institutional subscribers pay more for a journal than individual subscribers? The answer in all these cases is glaringly obvious: *Because they can afford to!* Such cross-subsidization is a well-accepted practice in scientific circles and I for one cannot see anything wrong with it. Indeed, by wide-basing the participation at conferences, such a practice actually promotes the health of the scientific community at large.

In support of his letter, Balasubramanian says 'To get a feel of what some non-residents feel about this asymmetry' and then proceeds to quote *at length* from a letter written by a 'distinguished Indian-born scientist from the US' who has apparently been invited to give a plenary talk at some conference. Given that the extract forms more than two-thirds of the letter, and from the last paragraph, I cannot help suspecting that the real purpose of his letter is to give a forum whereby this 'distinguished Indian-born scientist' can air his/her views anonymously. I do not know who this 'distinguished Indian-born scientist' is, and judging from the preachy and moralizing tone of his/her letter, I don't want to know anyway! The remarks of this 'distinguished Indian-born scientist' do not by themselves make any sense, as they are a mix-up of entry fees to the Taj Mahal and conference registration fees, and have all the hallmarks of a tirade than a reasoned plea. The only substantive comment he/she makes (and one

has to wade through mounds of verbiage to find it), is that some non-Indian scientists may also be poor. The obvious solution is to extend the subsidized registration fee to anyone from a Third World country. Instead Balasubramanian's anonymous friend tries to score some political correctness points by talking about 'discrimination on the basis of nationality'. It is annoying to have these utterly tactless comments described as 'gracious'.

It is extremely dangerous to draw general conclusions on the basis of a small sample size (in this case, one). I have taken part in the organization of about a dozen international conferences during the past decade, and I have always charged differential fees – both among Indians and overseas participants, and among students versus non-students. The total number of overseas participants in all these conferences would be close to five hundred, and I have not heard a single word of complaint! I would submit that my sample size is a lot

more respectable than Balasubramanian's. And yes, in the past I have extended the 'Indian' registration fee to participants from other impoverished countries, such as the former Soviet-bloc countries.

As for the comment that international conferences held in India under the auspices of international professional societies are *forced* to charge the same

registration fee for all participants, surely he should know that such a policy would exclude most Indian scientists from participating in such events. Indeed, many Indians suspiciously view these events as jamborees for overseas participants to have a vacation in India, untainted by any contact with the indigent locals.

I for one am all in favour of differential fees. If someone does not like it, he doesn't have to attend the conference – as simple as that!

M. VIDYASAGAR

8-2-120/120/A/14, Plot No. 3,
Road No. 14, Banjara Hills,
Hyderabad 500 034, India

The teaching of mathematics

The teaching of mathematics is an art and science as well. Unless one can master the basics of this art and science, one can never become a successful teacher of mathematics. Any kind of artistic work requires imagination, a sense of beauty and skill on the part of the artist. Mathematics teaching too, requires all these. Any branch of science on the other hand, requires an analytical mind, controlled emotion, a deep sense of logic and an explorative attitude. Every science is based on some basic principles which control all phenomena – all derivations. Success in teaching mathematics depends not only on the knowledge of mathematics, but certainly on the creativity of the teacher also – on his understanding of the basic principles of teaching and the psychology of students. This is true particularly because of the nature of the subject. Mathematics as a subject

is totally different from other subjects. Indeed, the joy and excitement of learning mathematics does not lie in the imagery or in the suspense of events or in the establishment of theories and ideas, but in the precision of arguments – in the search for pattern – in the successful interpretation of natural phenomena.

Teaching is not merely delivery of sets of information. Mathematics teaching means persuasive arguments to pass a quantum of knowledge from the teacher to the taught. Thus the primary objectives of teaching may be identified as developing: (a) an interest and love for the subject; (b) an analytical bent of mind, i.e. a sense of logical reasoning; (c) an aggressive attitude to attack new problems and to intrude upon new ideas and new concepts; and (d) confidence.

To achieve the above objectives, one has to have a differential approach depend-

ing on the level of a course, the quality of the students, and nature of the component to be taught.

In fact, teaching mathematics requires many things material, but unless there is a rapport – a willingness on the part of the teacher and the taught, it is bound to fail. It is not a marketable commodity that can be sold and purchased. It is to be inherited by the lover of mathematics and bequeathed to the lover deliberately and not by coercion or force. Neither the most decorative classroom with costly projectors nor a wonderfully rich library can achieve full success, unless there are good teachers to carry forward the flying colours of the queen of science.

D. CHATTERJEE

*St Xavier's College,
Institute of Engineering and Management,
Kolkata 700 016, India*

Plight of scientists at the Bose Institute

Bose Institute, a premier research institute of India, was founded in Kolkata in 1917 by Acharya J. C. Bose, to carry out research in the physical and biological sciences. Apart from the path-breaking contributions of the founder, early detection of the mu meson by D. M. Bose and discovery of cholera enterotoxin by S. N. De originated in this institute. This is one of the very few research institutes in the country ideally suited for multi-disciplinary research. Shortly after independence, the institute came to be funded by the Department of Science and Technology (DST), Government of India. It is the DST that exclusively provides funds for the running of the institute at present.

Since the mid-nineties, these funds remained at the minimal level, barely sufficient to meet the infrastructural requirements (salary, electricity, telephone bill, etc.). For last five years, practically the entire research funds are being obtained from external funding agencies (CSIR, DBT, DST, DAE, ICMR, INDO-US, INDO-EEC, etc.), both national as well as overseas, to individual scientists (as principal investigators) against submitted and peer-reviewed research proposals.

Since 1998, however, Bose Institute has been going through an acute financial shortfall, and even the above minimal funds have become insufficient. This happened due to a number of reasons, the

foremost amongst which is the burden of additional salary and pensions arising out of the pay revisions recommended by the Fifth Pay Commission. The Council of the Bose Institute has discussed these matters and extra funds were sought from DST to make up for the arrears and current shortfall. The latter, however, has not so far been able to provide the requisite funds, despite having committed to meet the shortfall. The reasons for the delay are unknown to us, but it is evident that the delay has allowed the shortfall to build up and accumulate. This has led to the present critical situation with a consequent deleterious effect on the scientific research activities of the insti-