

## Appalling lethargy

Issues raised in *Current Science*<sup>1-4</sup> about falling number of scientific publications are of continuous concern. At present nearly three lakh persons are working as lecturers, readers and professors in Indian universities and colleges, out of which approximately half belong to science streams. Further, more than one lakh persons are cumulatively working in the scientific cadre of the Central and State governments' owned scientific institutions and laboratories, as research associates and research scholars and in technical organizations, NGOs and research wings of government as well as in private industrial establishments. According to *SCI*, this scientific force of nearly three lakh persons have published 12,127 papers in 2000 and 14,983 in 1990 and according to the *Web of Science*, the number of papers published in 2000 and 1998 are 17,501 and 17,712 respectively. Admittedly, not all the Indian journals and the proceeding volumes are listed in these two scientific work-compiling bodies. If

papers published in all journals and proceeding volumes are also included, even then the number may not cross 30,000. However, for university and college teachers it is mandatory to devote a good part of their duty hours in research activities in addition to their teaching and other responsibilities. Scientists working in laboratories are also required to publish certain number of papers in a certain block of time. Though most of the publications are multi authored, for the sake of simplicity if one publication is attributed to one person, then it is implied that only 10% of persons are actively engaged in research and the rest are not taking research work seriously. The central government is spending Rs 13,000 crore on research and state governments are paying the salary to college and university teachers and if the cost of one paper is calculated, then it would be more than *rupees one crore per paper*. One of the reasons for poor referability or low-impact factor of publications is certainly related

with their quality although one can easily spot Indian works in the best reputed journals also. However, this being a more complex issue, it requires a thorough introspection. Should the governments reformulate their policies about accountability of scientists and teachers? Alternatively, government should give substantial incentive along with de-bureaucratization and procedural liberty for those individual teachers and scientists who are actively engaged in research pursuits.

1. Singh, R. N., *Curr. Sci.*, 2002, **83**, 677.
2. Arunachalam, S., *ibid*, 107-108.
3. Arunachalam, S., *ibid*, 195-196.
4. Balaram, P., *ibid*, 193-194.

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## Smallpox variolation

This is in response to A. V. Balasubramanian's (AVB) letter 'Prevention of smallpox in ancient India' (*Curr. Sci.*, 2002, **83**, 1055). The practice AVB has referred to is 'variolation', i.e. the use of human tissue containing smallpox virus (*Variola*) as the immunizing agent. Variolation in any form, including what was allegedly practised in Bengal, was extremely risky. It is to be distinguished from Jenner's 'vaccination', so called because it used *Vaccinia*, the infective agent of cowpox. As for Governor Hol-

well's statements, it must be evaluated in the light of the fact that he was not a doctor or a scientist. His assertion (as quoted by AVB): 'When the before-recited treatment of the inoculation is strictly followed, it is next to a miracle to hear, that one in a million fails of receiving the infection, or of one that miscarries under it,' is pure hyperbole, not based on statistical data. The phrase 'it is next to a miracle to hear . . .' itself reveals that it was hearsay, not fact in his personal knowledge. Does anyone know

how many persons receiving the smallpox variolation became very sick or died as a result? Of course, anyone surviving the disease will have lifelong immunity! But at what risk? Vaccines derived from *vaccinia* are almost 100 per cent safe, and they give immunity for up to 30 years.

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