centres do little or no research, with less encouragement towards interdisciplinary teaching and research.

There is not only a real hunger for quality education in India, but also a chronic shortage of good quality teachers[4]. Basically, a fundamental requirement for a university teacher is that (s)he be efficient in teaching, but also (s)he should be a good researcher. At times, promotions are given only on the basis of the former and the latter aspect is often neglected. There is no paucity of research funds, more important is proper projects and proper allocation of funds to genuine researchers. As pointed out by Mashelkar[5], 'Teaching without research is of little use in the universities and what we need basically is a close association between all national labs with different universities which not only helps in teaching but also help us to create more quality research scholars'. The acute shortage of qualified and dedicated teachers cannot be a real model or inspiration to the younger lot. In the name of selections and promotions; nepotism, regionalism, provincialism and casteism are more dominant than qualification and dedication of teachers. These 'isms' are spreading like cancer, the root cause being the interference by politicians. Appointments of politicians as Vice-Chancellors is causing great damage to the academic system. The present plan period is a 'knowledge investment plan' and the government is trying to make a big change in the higher education system. Simultaneously we should make the teaching profession more attractive and the problem needs to be addressed both professionally and psychologically, by giving teachers opportunities to enhance their knowledge by providing proper support systems. However, the irony is that this profession is no longer given the due respect in the present society. The time has come when the government should start the IES, in order to promote ethical and moral values in science, and also help in building a national character.

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Support fund for national researchers and knowledge workers

There is a dire need of a financial corpus dedicated to the welfare of the researchers, knowledge workers and intellectuals in the country. Researchers, thinkers and science enthusiasts, who are not supported by any regular research support grant, can be benefitted by the proceeds of the fund. The fund would also provide logistics and generate necessary infrastructure for creation of a common platform, for interaction of interested researchers and like-minded people.

The cultivation of genuine and innovative ideas and approaches is an important and indispensable step towards development of pioneering technologies for the advancement of the society and the nation. There is no dearth of intellectual talent in the country, and the need is to provide a state-funded support for its better utilization in the economic and social upliftment of the country. There are several capable people in the unorganized sector who wish to contribute to science and research to achieve intellectual satisfaction. The support fund for national researchers and knowledge workers must function as an autonomous body and must be kept free from bureaucratic shackles and corrupt practices, which continue to ail most organizations and bodies in the organized and government sectors. The fund should be kept open to donations from private parties and organizations, besides an uninterrupted funding from the government, to meet its objectives. People of eminence and proven excellence must be entrusted with the management of the fund, so that the overall management is efficient, transparent, and responsive to the ground realties of the problems faced by the researchers. The fund can also help to suitably patent and/or publish the significant findings of such freelance researchers. The creation of such a fund will encourage budding researchers to take up science, specially pure sciences as their career, and rejuvenate the entire scientific research scenario in the country.

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Challenges in marketing ayurvedic drugs in USA: possible remedies

In the recent issue of *JAMA* (2008, **300**, 915–923), an article about heavy-metal contamination in Indian-manufactured ayurvedic medicines, sold in the US via Internet marketing, was published by a group of scientists, who had earlier published a similar report in *JAMA* (2004, **292**, 2868–2873). However, I must mention that the previous report was somewhat misleading, because there was no classification of herbal and herbomineral drugs and authors mentioned a high percentage of contaminated ayurvedic drugs sold in Boston, USA. However, this time, the authors have properly classified the medicines as rasashastra (herbomineral) and non-rasashastra (herbal), which reflected actual picture of heavy-metal contamination in herbal products; the contamination is less than that in the previous report. It is well known that ayur-

veda is an holistic approach and comprises of lifestyle, food and medicine. Further, medicine covers three groups, i.e. herbal, herbomineral (metallic/bhasmas) and animal products.

To my surprise, the article indicates that the products made by ADMA (Ayurvedic Drug Manufacturers Association)-associated companies are equally contaminated as those made by AHPA (American Herbal Products Association) member companies of US. Rather, Indian products were comparatively cleaner (19%) than the US-manufactured products (21%). These data suggest that heavy-metal contamination in herbal products is a universal problem and not only related to India. Therefore, a consolidated effort should be made to solve this issue. In my view, the Indian Government must take up this challenge with the help of International organizations such as WHO, World Bank or the group of Developed Nations.

There is an urgent need to develop a decentralized testing facility, which should be quick, affordable and easily accessible to Indian manufacturers. They must be networked and utilized, under one umbrella, to facilitate the testing of raw materials and finished products of the Indian manufacturers. A national coordinator should be appointed for this task with immense flexibility and funding.

Based on public data, there are about 8000 licensed pharmacies in India, but only a few of them are major exporters. However, I am sure that many AHPA member companies in the US are buying ayurvedic products in bulk from these manufacturers and reprocessing under their names, which might be permissible under the law of the land. Thus, these US buyers should be educated to buy tested products and the Indian companies should be advised to outsource this testing facility, because maintenance of a science laboratory with sophisticated equipment and expensive manpower is beyond the reach of most of them.

Since the ayurveda drug manufacturing sector is not well organized in our country, it should be encouraged as a small-scale industry rather than a mega industry. One has to keep in mind that the drugs should be prepared in small batches and they should be consumed within 2–4 months. If these 8000 companies are networked, they can prove to be the strength of India, rather than a burden for making so-called spurious drugs in the name of ayurvedic drugs.

Lastly, more emphasis should be given on quality of raw materials, because it is collected from wildly grown sources and not cultivated. Therefore, proper identification and thorough washing of these raw materials is the only approach to make cleaner products, according to the WHO guidelines. Further, proper networking of herb-collectors and traders is important, because India is a vast country with great biodiversity and a plant easily available in one region may be an endangered species in another.

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Indian science and technology in a scientometric perspective

The editorial 'Scientometrics: A Dismal Science' by Balaram[1] has brought into focus the need to evolve a satisfactory system for evaluating the impact of scientific publications. One may consider scientometrics to be a necessary evil. However unscientific it may be, scientometrics has yielded some concrete indicators helpful for policymakers. Balaram observes that 'the inability of many scientometrists to appreciate the need to check their data and carry out control analysis renders many studies carried out in India almost useless'. One may note here a couple of scientometric studies by Gupta and Dhawan[2,3] conducted in India, in accordance with well-established methodology. Individual scientists and institutions can check the data used in these studies. These studies have been conducted in the National Institute of Science, Technology and Development Studies (NISTADS), New Delhi. Indian scientometrists need to take serious note of Balaram's observations and make necessary efforts to raise the standards of their studies, so that their works will benefit science and the nation to the fullest extent.

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Time for methanol revolution

Today's fuel crisis can only be overcome by the use of safer and cleaner alternative fuels. The potential of alternative fuels lies in the fact that when used in vehicles, they emit lesser amount of polluting gases and they are generally derived from renewable sources. Today, we have options such as bioethanol from lignocellulosic biomass, hydrogen gas, and biodiesel from microalgae and methanol which can be used as alternative fuels. We have earlier emphasized the need for bioconversion of lignocellulosic waste to bioethanol[1]. Ramesh Maheshwari also provided an insight about the usefulness and a comparison of the microbial species involved in the production of bioethanol[2]. However, keeping in mind the Indian population and immediate energy needs, methanol has a high potential for being used as an