Retired hurt, not the scientists but the science of India

Vijayan[1] summarizes the problems faced with respect to funding of research. He suggests how grant system could be improved to achieve better quality in research. The manner in which grant applications are handled and funds are released is only one dimension (albeit a major one); there are other aspects to the problem.

A number of editorials by Balaram analyse, compare and contrast various dimensions of higher education, science and scientific research in India. Desiraju[2] has suggested the need to merge the three science academies in the country. However, there is no significant response from the science community. The Prime Minister of India admits, as quoted in Vijayan's article[1], that there is excessive bureaucracy and hierarchy in the Indian science system. Media recently quoted HRD Minister Kapil Sibal's comment on the appointment of vice-chancellors, which is suffering from political interference. Immediate action can be taken to make political interference a punishable offence and to minimize bureaucracy in universities and scientific institutions. Scientists can be given the freedom to further their academic activities. There is also an urgent need to separate the grant processing and sanctioning divisions of science-promoting agencies such as DST, DBT, DAE and CSIR. These agencies, among others, have become unwieldy and bureaucratic in spite of being headed by reputed scientists. The fate of Indian science is decided by a few and a majority of the scientists remain spectators.

Attention may also be drawn to Gowrishankar's note[3]. While agreeing with him, I would suggest that applications in different areas of science be handled by institutions and universities of repute, where objectivity persists. Carefully chosen peers from such institutions could evaluate projects to ensure that funds are released systematically and that the principal investigator has the freedom to manage funds.

1. Vijayan, M., *Curr. Sci.*, 2011, **100**, 815–816.
2. Desiraju, G., *Curr. Sci.*, 2010, **99**, 1510–1512.
3. Gowrishankar, J., *Curr. Sci.*, 2010, **98**, 478.

KALLURI SUBBA RAO

Center for Biotechnology,
Jawaharlal Nehru Technological University,
Hyderabad 500 085, India
e-mail: ksrsl@yahoo.com

The bubbling Baratang mud volcano: a geological signature

The Andaman and Nicobar Islands have always been a discovery destination for biologists, geologists and anthropologists. Situated 1400 km away from the Indian mainland, they remain pristine. Besides their unique flora, fauna and anthropological wealth, their geological resources are equally exciting. The Barren Island Volcano, is well known for its pyroloclastic activities. Here we report an interesting geological signature known as mud volcano (locally referred to as *Jwalamukhi*) from the Baratang Island about 80 km north of Port Blair, Andamans. Usually mud volcanoes are found associated with tectonic subduction zones. They are geological formations created through geo-excreted gases and liquids, and are of global concern[1] because they emit a large volume of methane over 10–33 Tg/year (refs 2 and 3).

The Baratang mud volcano is currently active and secretes greyish slurry (Figure 1) resembling the colour and texture of hydrated Portland cement. Fine slurry suspended in clear watery liquid constantly flows through small cylindrical outlets (3–5 cm in diameter). These outlets eject slurry bubbles throughout day and night. Seldom small and medium sized (0.5–2.0 cm) pebbles are also shot out. The continuously flowing slurry gathers in small puddles and then flakes into fine ash. Seepage from an outlet usually occurs for a period of 4–6 days and then ceases.

In 2004 the mud volcano had a few outlets. In 2011 the number of outlets and the slurry flow have increased. At present the mud volcano, which is amidst

Figure 1. A mud volcano outlet oozing slurry and pebbles; note the vent shooting out a pebble.

Figure 2. A 60 cm high mud cone.

Figure 3. The mud volcano in flame during December 2004.