

in matters of appointment. (iii) The University Grants Commission (UGC) should lay down selection criteria for appointment of Vice-Chancellors, to be followed by all universities funded by it. Surprisingly, there are minimum qualifications laid down for all the posts, from a peon to a professor, but there are none for the topmost post in the university. (iv) In addition to admin-

istrative experience of a candidate, the highest consideration must be given to research contributions made by him. The citation analysis may be used to determine the quality of research output. (v) There should be a mid-term review of the progress made by the university, so that the Vice-Chancellor may be made accountable for his actions. (vi) Above all, political interference

should be reduced to the minimum in running the affairs of Indian universities.

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Role of funding agencies for the betterment of taxonomy

The article by Pushpangadan and Narayanan Nair (*Curr. Sci.*, 2001, **80**, 631–638) rightly addresses the poor state of a highly relevant and indispensable tool – taxonomy. The fact that we lack expertise in the field is revealed by the simple fact that most of the floras being worked out in India are based on those published by the British. Over the past fifty years, our taxonomists have not been able to publish a flora that could be used as a replacement for/compared with Hooker's or Gamble's. What they are doing is simply relocating the plants mentioned in these references from different parts of the country and creating new names, just for the purpose of enriching their bio-data. A taxonomist used to say that creation of new names and new taxonomic groups is indispensable as stability has not yet been achieved in taxonomy. Since evolution does not take place in a day or two, there is no possibility of changing the floristic characters within a short period. So this comment is indigestible.

Regarding the poor state of taxonomy, the funding agencies play a prominent role. There are numerous research institutes and university departments doing different types of taxo-

nomic work using the funds provided by different government agencies like Ministry of Environment and Forest, DBT, ICAR, CSIR, etc. In some cases, due to lack of coordination among these agencies, the same or a closely-related problem is being run by two or more institutes using the funding provided by different agencies. For achieving stability in taxonomy, all the available floras of the world should be worked out. In order to achieve this objective, taxonomists should, for the time being, concentrate on flora that has not been exploited. Publishers of journals should also discourage relocations and rediscoveries based solely on morphological characters.

Pushpangadan and Narayanan Nair point to the fact that taxonomists need to work in a multidisciplinary manner. There is certainly a misunderstanding among the scientific people that taxonomy means morphological characters only, without incorporating aspects from other areas like cytology, biochemistry, molecular biology, etc. into the classical taxonomy, either due to lack of knowledge or for the fear of losing their identity. External morphological characters in most cases will be

dynamic. We are aware that in the case of humans, morphological characters cannot solve disputed parentage. Likewise, while addressing the characters of taxa they should use all the available sources like cytology, chemistry, molecular biology, etc. This should be done in the taxonomic group of an individual institute itself. The present scenario, where multidisciplinary work is being carried out, is that it is being run by different persons in different groups. If this goes on, how can a taxonomist become an expert in understanding the plant system?

The funding agencies, instead of giving away lakhs of rupees for study of flora of vast areas, should concentrate on smaller problems like study of a single genus which incorporates all such methods by which a plant can be addressed properly. This could eventually be useful in creating a national database on our flora.

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EERC and closure of Earthquake Division of GSI

This refers to the news item 'More plans afoot for earthquake management and research' by Nirupa Sen (*Curr. Sci.*, 2001, **80**, 1095–1097). The Bureau of Indian Standards (BIS) has merged earthquake-prone zones of least and

negligible significance zones I & II in the Seismic Zonation map of India. Accordingly, now India is comprised of just four seismic zones. Unfortunately, BIS has failed to publish the same till date, although it has appeared in the

Vulnerability Atlas of India, published by Ministry of Housing and Urban Development, Government of India in 2000. District maps affected by natural hazards, i.e. earthquake, flood and cyclone over entire India are given in the

atlas. Effects of such calamities on various categories of houses (RCC, bamboo- or brick-constructed or mud huts) are expressed in a lucid, but tabulated manner. Establishment of a centralized body like Earthquake Evaluation Research Centre (EERC) by DST is a historical necessity. The Geological Survey of India (GSI), a premier 150-year-old earth science organization had created an Earthquake Division on 15 April 1999 in the National Capital Region, Faridabad, Haryana. Better coordination and understanding with other central organizations was the sole

criterion for establishment of such a division. But GSI is bent upon its closure and as a first step, recently shifted it to Lucknow, with only two scientists. The rest of the scientists were posted to other places. Its closure is imminent. It is an unfortunate development and EERC shall oppose such a move. Among 212 seismological observatories in India, 75 are manned by India Meteorological Department (IMD) and only 57 stations are chosen for determination of the epicentres of earthquakes. It appears strange that earthquake data of India are monitored and maintained by

the Weather Office, IMD. Further, meteorologists dominate the IMD and seismologists occupy insignificant positions in the department. EERC may be entrusted such a specialized assignment. Majority of 212 observatories may be networked for compilation of earthquake data.

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Bandwagon science in India

P. Balaram's comment in the editorial, 'Lost innocence' (*Curr. Sci.*, 2001, **81**, 229–230), 'There is, presumably, little new physics to be gleaned from nuclear blasts' is not supported by facts. The inadequacy of the current state of knowledge of physics available, which goes into the design of nuclear weapons, may be judged by browsing through the recent issues of *Physics Today* (December 2000) and *Los Alamos Science* (2000, **27**). Nuclear-weapon states would not be spending billions, if Balaram's view was tenable.

I am of the view that Balaram's advice to the academies in India 'to limit their domain to conventional academic science and avoid straying into the difficult waters of strategic science and technology', is already being followed. This is reflected in the elections to the

fellowship. A. P. J. Abdul Kalam was not elected by one of the academies. However, (with due respects to her), late Indira Gandhi was. This attitude has also led to the proliferation of 'bandwagon' science in India. The research on high-temperature superconductivity is a prime example. In India, nothing much has emerged from this, both in the academic and the technological areas. On the other hand, it has encouraged the import of scientific instruments and killed whatever little efforts on building indigenous instrumentation existed in the country.

It may also be difficult to compartmentalize science into two neat categories of academic and strategic science. A few examples will suffice to illustrate this. The tetraflop computers, like Blue Pacific developed for 3D simulation of

nuclear weapons, are also being employed to understand protein folding. In the middle of the 20th Century, a storehouse of data on nuclear and radiation transport cross-sections was developed essentially for design of weapons and nuclear reactors. Who would have imagined then that in the future this database combined with Monte Carlo statistical methods will be used for creating a new tool for analysing and planning radiation treatment of cancers?

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