A just education system

The editorial by P. Balaram (*Curr. Sci.*, 1999, **76**, 361–362) reads like my life story. Every word contained in it is so very true.

I was proud to be associated with a premier institute for my Ph D in the early 90s. I happened to be the first student of an extremely (over) ambitious mentor who wanted to set unusual standards of higher learning. I eventually quit my Ph D although I worked for my degree for almost 3 years. I joined with the hope of learning intricate cellular mechanisms and I left after I learnt a lot about the darker-side of human beings. Sadism and arrogance were the dictates of the day. The cartoon depicted below the editorial was really apt. Each day my frustration grew and at the end of 3 years I began to believe that I had no originality, creativity or 'stamina' for research.

I was completely wrong. With encouragement from my family and the grace of the Almighty, I have managed to produce ripples in another field. With a travel-related product, my organization has received not only rave reviews but a lot of appreciation from my customers who have shown genuine concern for my 'creativity and originality'.

The potential of a student needs to be unleashed in order to produce original results, the field of study does not matter. What matter most are the conditions under which the student is made to think. If the thought process is corrupted (for whatever reason), we will soon have individuals with sional/higher degrees and a high amount of 'animal behavi process of education/learnin aim at improving the overall an individual's life and not m grees which have no meanin this editorial will go a long wa ing the road to a 'fair and jus tion system.

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Indian journals and *SCI*

The excellent suggestions outlined in the editorial 'Scientific publishing in the Third World' by P. Balaram (*Curr. Sci.*, 1999, **76**, 117), hold true not only for *Current Science* but also, to a large extent for other Indian journals, especially those which, at least, find place in the *Science Citation Index* (*SCI*). Simply because, of all the journals published in India, only 10 were covered by the *SCI* in its 1997 edition which is an international indexing service for science, brought out by the Institute for Scientific Information, Philadelphia, USA. The twin criteria for inclusion of a journal in the *SCI* are: (i) a journal's usefulness in furthering new scientific knowledge, as seen from the frequency with which it is quoted in the literature of science, and (ii) its punctuality. To put it simply, the *SCI* is the only source of citation data on journals, which helps in ranking, evaluating, categorizing and comparing journals.

Of late, the number of Indian journals in the *SCI* has been stagnating. Specifically, it varied between 9 journals (1996) and 13 journals (1990) during 1989–1997. However, it was as high as 23 in 1984 whereas the current figure

Table 1. Coverage of Indian journals in SCI in 1984 and 1997 – A comparat

Journal	198
Comparative Physiology and Ecology	✓
Current Science	✓
Entomon	✓
Indian Journal of Animal Sciences	✓
Indian Journal of Biochemistry and Biophysics	✓
Indian Journal of Chemistry, Section A: Inorganic Bio-inorganic, Physical Theoretical and Analytical	✓
Indian Journal of Chemistry, Section B: Organic Chemistry including Medicinal Chemistry	✓
Indian Journal of Experimental Biology	✓
Indian Journal of Medical Research	✓
Indian Journal of Pure and Applied Mathematics	✓
Indian Journal of Pure and Applied Physics	✓
Indian Journal of Radio and Space Physics	✓
Indian Veterinary Journal	✓
Journal of Astrophysics and Astronomy	✓
Journal of Biosciences	✓
Journal of Genetics	✓
Journal of Scientific and Industrial Research	✓
*Journal of the Geological Society of India**	✓
Journal of the Indian Chemical Society	✓
*National Medical Journal of India**	
Pramana – Journal of Physics	✓
Proceedings of the Indian Academy of Sciences – Animal Sciences	✓
Proceedings of the Indian Academy of Sciences – Chemical Sciences	✓
Proceedings of the Indian Academy of Sciences – Earth and Planetary Sciences	✓
Proceedings of the Indian Academy of Sciences – Mathematical Sciences	✓
Total	23

*Started in 1988.

for the year 1997 is 10 journals (Table 1).

With this backdrop, there is an urgent need to revive or resuscitate those Indian journals which are not being covered in the *SCI* at present but were very much part of the *SCI* basket, say in 1984 to begin with. This cannot be achieved overnight but the following steps are suggested: (i) A National Programme on 'Enhancing the global visibility of scientific journals published in India' needs to be initiated by someone like the National Information System for Science and Technology, Department of Scientific and Industrial Research, New Delhi; and (ii) In order to debate on the quality of scientific journals published in India on a regular basis, the Indian Science Congress Association, Calcutta should consider devoting a separate full fledged Section/Committee in its annual session on 'Indian Scientific Journals'. This initiative may help to focus the national attention on this neglected though important activity of Indian science.

One hopes these suggestions may able to bring the desired results slowly but surely.

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Hybridization: A potent factor in speciation

Tanuja *et al.*[1] strongly advocated the importance of hybridization in the speciation process in *Drosophila*, the most worked out dipteran for genetic analyses. The authors provided convincing evidence for hybrid origin of species in *nasuta* subgroup of the *immigrans* group of *Drosophila* through inter-racial hybridization experiments between *D. nasuta nasuta* ($2n = 8$) and *D. n. albomicans* ($2n = 6$) resulting in the formation of 16 new karyotypic cytoraces.

In support of their claims, hybrid origin of species has also been hypothesized in yet another dipteran, the mosquitoes[2]. Akin to *Drosophila*, species groups with its members having little or no morphological differences are abundant in all three important genera of mosquitoes, i.e. *Anopheles*[3], *Culex*[4] and *Aedes*[5], and have been the subject of genetic analyses in relation to evolution and speciation, disease transmission and control. Mosquitoes, although much known for their notoriety (being the carriers of malaria, filaria and arboviruses), are indeed equally well suited for teaching and demonstration of genetic/cytogenetic analyses. All mosquitoes have three pairs of chromosomes ($2n = 6$), have short life cycle and possess tremendous reproductive potential. Many species can easily be brought into laboratory culture and intercrossed, thus providing an ideal material for study of evolution and speciation mechanisms.

Aedes (*Stegomyia*) *scutellaris* is one such group comprising over 30 closely related species having insular pattern of distribution in the south Pacific[6]. Most species are endemic to single islands and can easily be inter-crossed in laboratory conditions. A multifaceted approach including inter-specific hybridization, cytology of species and hybrids, and population genetics was exploited to study the genetics and evolution of reproductive isolating mechanisms in this species group. These combined measures revealed that hybridization has been a potent factor in speciation together with geographic isolation and cytoplasmic differentiation[2].

Inter-specific hybridization supported allopatric mode of speciation through geographic isolation and cytoplasmic differentiation, the latter being the key factor in restricting gene flow between species[7]. Cytological analyses of species and hybrids revealed fixed inversions and chromosome size differences; the extent of chromosomal changes being parallel to morphological differences between species[8]. Further, analyses of chiasma frequencies (a measure of genetic relatedness) provided a cytological evidence for hybrid origin of species. So much so that while mean chiasma frequency was species-specific, the mean chiasma frequency of hybrids between two species was not significantly different from the third species, thus making hybrid origin more likely a process in evolution and speciation. Based on this criterion, the author was able to construct a phlogenetic tree for the species investigated[2].

In fact, hybrid origin has been considered to be the most important among transilience modes of speciation based on population genetic approach model by Templeton[9], and has been proposed by Belkin based on morphological similarities and distribution pattern in mosquitoes[10]. It is envisaged that hybridization will be accorded its due importance as a process in evolution and speciation.

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