# Science journals

The editorial on 'Journals' (*Curr. Sci.*, 2000, **79**, 685–686) has raised some questions of vital importance about science journals in India. The editor finds the government grants to be responsible for their existence but fights shy of probing deeper into the malady afflicting Indian science. The journals supported by partial government grants account for only a fraction of the total number. How do the remaining journals survive without government grants? Do the journals receiving government grants make better 'impact' even in Indian scientific circles? Does the mechanism for selecting the journals for a grant ensure that it promotes quality? If not, why? However, money alone cannot make a journal. Many journals started by well-known commercial publishers have failed to survive, but not for the paucity of funds. If funds alone were to decide the quality of a journal, the journals of various science academies in India should have made an impact on Indian science. Unfortunately, the senior scientists and Fellows of the Academies themselves do not find the journals, which they also edit, worth publishing their own work.

A journal is first what its editor wants it to be, and then what kind of papers the journal is able to attract. Over the past few years, there has been a growing emphasis on the number of publications, irrespective of the quality, in the evaluation of researchers at various levels. The number of edited books, the membership of editorial boards, and also the membership of professional societies, are also common criteria for appointments, promotions and awards. Many senior scientists take pride in the number of publications they add every year to their thick CVs. Under the circumstances, there is a mad rush to see oneself in print again and again, even if it means that the cost of printing has to be paid and hardly anyone ever reads the paper. The same data are published repeatedly in different forms, if not in the same form, in different journals or edited volumes. I know of many individuals who are willing to pay any amount for the publication of their paper, sometimes because they can get the money from their projects or institutions. In fact, a manuscript has to be printed along with some others and properly bound under the covers with the title of a journal before it becomes qualified to be called a scientific publication. If the author gets it printed with his own money and circulates it widely to the libraries and individuals, it is still not deemed to be a publication. Clearly, the editors and journals are in demand. Many of these journals ask the authors to buy a minimum number of reprints at a price that generally meets the cost of printing. The annual subscription required from the authors brings in the amount to meet other costs. The editors of these hundreds of journals probably render a valuable service to the authors by providing them an outlet for their immense creative activity (!) and thereby enabling them to advance upwards. We should not forget that our senior scientists rarely fail to encourage these editors and lend credibility to the journals by allowing their names on the editorial boards in different capacities. The same senior professors are unable to find time to review papers or to offer advice on how to prepare a paper. Many editors probably even do not know what is published in their journals. The manuscripts are received from the authors, sent to the reviewers, and then the comments are returned to the authors, mechanically by their office staff. The editors' role is limited to taking a decision on the manuscript based solely on the recommendation of the reviewer(s). Majority of the journals cannot afford the luxury of an office, and the editors simply accept every manuscript received by them and pass it to the printer. How grateful is an author to the editor who sends an acceptance letter in place of an acknowledgement!

Do we ever care to educate the researchers about how to prepare a research or review paper? Has any researcher ever been educated about editing and publishing a journal? Preparation of a paper and its publication are steps to be taken only after a research problem has been identified, the study has been designed, and data properly collected and analysed. Therefore, the poor quality of journals is largely due to the kind of research in this country. The root causes of deterioration of scientific research in India are too many, but none of the individuals (holding high academic positions) or institutions (e.g. UGC, CSIR, DST, MOEF and the Academies) cares for the rot. I doubt if anyone is willing to take action and bring the mushrooming of journals to halt. Is *Current Science* willing to take a lead and help weed out the journals? Is there any individual or institution willing to help improve the quality of scientific research in India?

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# Suggestions for mapping fish research in India

In 1991, Aquisap *et al.*[1] estimated that the whole of Asia, which has a long traditional history of fish culture for over 2000 years, contributes less than 2.7% scientific articles to aquatic biology, which includes fishery science. Neither Aquisap *et al.*'s article[1] nor its subsequent focus in an Indian publication[2] received attention from fishery scientists of India. A recent article by Jayashree and Arunachalam[3] in *Current Science* has elicited enquiries and com-

ments from a number of fishery scientists. Therefore, *Current Science* must first be complimented for its greater visibility among fishery scientists of India. Indian fishery scientists must also be complimented for the accelerated scientific publications at the rate of 460/annum in fishery science[3], in comparison to the annual output of 50 publications on the whole of aquatic biology during the 80s[1]. Representations made by scientists like P. K. Krishnakumar[4], that Jayashree and Arunachalam[3] should have used more keywords than 'fishes' and 'aquaculture' and 'India' alone are not important. Aquisap *et al.*[1] also pointed out that the expected annual citation rate for the publications of Asian aquatic biology was 1.29 but the observed rate was 0.78 only. Unfortunately, the visibility and citation rate for publications on fishery science by Indians have continued to remain low.

Jayashree and Arunachalam[3] should be complimented for showing contributions made by different Indian institutions, both government and university. A fact that merits consideration by Jayashree and Arunachalam[3] is that they have analysed publications on fishery science by Indians only from the point of view of Garfield[5]; for each scientific publication, two kinds of impact may have to be considered, especially for food production sectors, which are critically important for developing countries like India. The point raised by E. Vivekanandan[6] on the impact made by Indian research publications in fishery science on 'productivity' is significant and it is likely that Jayashree and Arunachalam[3] may consider and modify Garfield's[5] concept to make a scientometric analysis of research publications suitable for countries like India.

An analysis made by Ponniah[7] shows that in pollution studies relevant to fishery science, 47% of publications selected tilapia as a model species. Unfortunately, rohu has received attention by only 0.3% publications. Pollution research on rohu will be more relevant to India. An analysis of this kind could have proved a constructive suggestion to fishery scientists of India.

Perhaps Jayashree and Arunachalam[3] will have an occasion to discuss with other fisheries experts in the ensuing national seminar on 'Sustainable Fisheries for Nutritional Security' to be held at Chennai during December 2000 and will draw such conclusions, which may help the Indian fishery scientists to make a greater impact on scientific and economic development of India.

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# Drug delivery – Today's scenario and opportunities for Indian pharmaceutical industry

In India, apart from the software industry, the pharmaceutical sector is the only one showing a constant growth of 15%, one of the highest in the world, in the last several years. At US$ 3.1 billion, the Indian pharmaceutical market is the fourth largest in the developing world and is expected to increase its annual growth from 15 to 18%, i.e. more than twice the expected growth of the world pharmaceutical industry[1]. Surprisingly, Indian per capita annual consumption of drugs of Rs 125 is one of the lowest in the world. With the implementation of TRIPS agreement which will allow the protection of product patents in India, the total scenario is going to change soon. This would demand the Indian pharmaceutical industry to spend more on R&D and to compete with the international market. Worldwide the pharmaceutical industry spends between 15 and 20% of its revenue on research compared to 1.8% by the Indian industry[1]. Research in the development of drugs has generally two major aspects, viz. (i) discovery of a new drug molecule (new chemical entity, NCE), and (ii) invention of new formulations of drugs with higher therapeutic index. The latter would minimize the unnecessary drug loss and unwanted side effects. In a recent editorial in *Current Science* it has been mentioned that discovery of new drugs involves huge expenditure to the tune of about Rs 2000 crores[2]. As a matter of fact, in the last twenty years no breakthrough drug molecule has been discovered anywhere in the world. What people have done is to synthesize a molecule by altering its structure to have enhanced therapeutic value[3]. In India during 1956 to 1995, a period of nearly forty years, only 14 drugs have been developed indigenously[4]. There is an increasing gap in drug research in the Indian pharmaceutical industry from the world scenario.

In the world scenario, drug delivery is an expanding industry based on hundreds of companies providing expertise and innovative technologies for improved delivery systems. Enhanced delivery leads to superior performance characteristics of the products. The blockbuster drugs whose life span in the market has been exhausted, can be resurrected by reformulating the drugs through novel delivery systems. At the same time the effective patent protection can also be enhanced. In India, pharmaceutical companies are facing a new challenge of generic competition for a particular drug whose patent life span has expired. The difficulty would increase enormously in the near future