

EDITORIAL

In the January 1991 issue we discussed the measures we were taking for the overall improvement of the Journal. And, the results of the efforts made by us in this direction could be seen in the subsequent issues. We believe there has been progressive improvement.

In continuation to our efforts in this direction, we organised a meeting of the Editorial Board of the Journal recently which recommended certain changes in the layout and get-up of the Journal. It is only as a result of the follow up action taken that you are now holding the copy of the Journal in a different style and get-up. We hope you will find this new format more elegant than the previous ones. The Editorial Board also felt that the Journal should try to attract the best of the Defence research work done in the country. We plan to approach the concerned scientists/laboratories on this matter.

There are several factors involved in getting high quality papers for a journal. The reputation and standard of any journal are linked to the quality of papers published in it and unless the journal is reputed, high quality papers are not submitted. Thus these two have a symbiotic relationship.

Multidisciplinary journals like *Defence Science Journal* should cater to a wide audience. In doing so, papers in certain fields get published more and more while the other fields are under-represented. A cursory glance through the past general issues of the Journal will certainly make out that the papers in the field of applied mathematics outnumber the papers in any other field. Efforts were made to provide balanced coverage of all the subject areas relevant to Defence science. Keeping in view the Editorial Policy of the Journal, the papers not having direct Defence applications are being discouraged. Preliminary scrutiny has been made stringent and papers of general and routine nature are returned to the authors, thereby allowing only papers of specific and applied nature to be reviewed by subject specialists. But the quality of the papers submitted for publication in the Journal is certainly not the best. When we consider the position of India amongst other countries in terms of manpower, research publications and scientific publishing fields, the poor quality of papers submitted reflects the standard of R&D work being carried out in the country.

India has the third largest scientific and technical manpower in terms of graduates produced from universities and institutions. India is ranked third (perhaps second now) in the number of researchers, behind USA

and the erstwhile USSR. India's rank in the publication of research articles is also significant even though we are far behind the relatively small but industrially developed countries like France, UK, Japan, Germany, etc. India is on the top among the Third World nations in terms of research output and also among the top 20 scientific publishing countries in the world.

Though the research output is considerable, its impact on the advancement of science is not encouraging. This may be because of the availability of very few 'first-rate institutions' and the mediocre research being carried out in a majority of the remaining R&D institutions. Consequently, the same is reflected in the papers published by the Indian scientists. One cannot but feel that in most cases the research is peripheral to the western R&D efforts. The quality of papers published cannot be improved unless the quality of research itself is improved. The outside world considered the quality of research papers published by Indian scientists as 'recycling of old ideas in new papers' (*Nature*, 12 April 1984, p. 583).

The coverage of Indian periodicals in the international abstracting/indexing periodicals and databases is also not good. *Chemical Abstracts (CA)* covered 288 Indian titles (in 1986); *BIOSIS* covered 273 titles (out of a total 9242 in 1986); *INSPEC* covered only 71 titles (out of 4140 in 1989); and *Science Citation Index* only 10 titles (out of about 40000 in 1987) (compare this with *Indian Science Abstracts* which covered 623 S&T periodicals in 1986). India ranked 9th with 24 titles out of 1000 most frequently cited journals by *CA* in 1986. In almost all the cases, the countries like Japan, Germany, Switzerland and Netherlands are ahead of India. The main criterion considered by these services are the quality of the papers published in a journal and the punctuality. When we consider that about 1500 S&T periodicals are published from India (excluding popular science magazines), the picture is anything but enthusiastic.

Why the quality of papers is poor in many Indian journals?

The answer is obvious. In many institutions, appointments and promotions are based on the number of publications, particularly those published in foreign journals. The quality of papers published does not appear to be a factor in most cases. A paper published in a less-known journal from a foreign country generally

seems to get more weightage than the one published in a well-known Indian journal.

Maintaining high standards in research as well as communicating the research results are the responsibilities of a scientist in particular and the scientific community in general. But it is a common practice in this country to submit high quality papers to foreign journals and lower quality papers (often those rejected abroad) to the journals in the country, barring a few exceptions. It should be borne in mind that there are many international journals which publish substandard research papers and also are not better than some of the standard Indian journals. That Indian and foreign journals are alike when the usefulness of the published literature is considered, is evident from the uncitedness of the published literature. A large percentage of papers published in frontline international journals are not cited by other authors (it is about 55 per cent according to a survey in 1990) though the percentage varies with the type and nature of the journal, subject field, etc. The main cause of uncitedness is that the researchers publish too many inconsequential papers to pad their resumes. This is also a consequence of the fragmented research publication process. Further, it is observed that a majority of the references made to the Indian journals are by Indian authors. This makes Indian research output an island by itself, irrelevant and peripheral to the international scientific efforts and does not diffuse into the domain of international science.

The early decades of this century saw the excellence of Indian science mainly through the efforts of such people as CV Raman, JC Bose, SN Bose, and MN Saha. They not only preached but practiced publishing their research output in national journals thus taking the reputation of the Indian journals to new heights. The trend of communicating the best research output abroad has been quite high in the recent decades. The points raised by the scientific community in defence of their submission to the foreign journals include better recognition, stringent evaluation processes, punctuality and timely publication of the journals, universal nature of scientific research, freedom of publication of research results, and so on. Some of the issues raised against Indian journals include timelag in publication, uncertain periodicity, casual approach in refereeing, etc. While there is an urgent need to bring out journals punctually and improve the printing quality of many Indian journals, the authors should also keep in their minds that after all, the research they intend to communicate abroad is the result of Indian efforts including the funding.

In a recent study it was revealed that Fellows of INSA (each with an average of 15 papers) had submitted, on an average, over 65 (in certain cases more than 70) per cent of their important contributions to foreign journals, while a sample of Founding Fellows of INSA revealed that they had published 77 per cent of their research work in Indian journals.

Lastly, we emphasise that by publishing in Indian journals one may not get the same recognition as from publishing in foreign journals. But if the Indian identity is to be attained in the international scene, some sacrifice has to be made. Once the trend is set, there is no doubt the scenario will change. There is a need for scientists of vision to uplift the stature of Indian journals by publishing their research work in them as Sir CV Raman did in his time. A few suggestions for improvement of the quality of the Indian journals are made here for the consideration of the scientific community.

1. Well-established and eminent scientists (for example, FNAs, FAScs, FNAScs, FIEs, FNAEs, etc) should submit their best research output to Indian journals. This would not only set the trend but also instil the younger scientists to follow the footsteps of the senior scientists.
2. More stringent refereeing and peer-review policies can be adopted to filter substandard and average papers.
3. The institutions should consider quality rather than quantity of publications 'produced' in appointments and promotions.
4. Equal (or even more) weightage should be given to the papers published in Indian journals. The practice of asking the number of papers published in international journals should be stopped, and instead, a person should be asked to provide any five or six significant contributions (as is the case in some western universities) rather than to provide a bibliography.
5. Fragmentation for merely increasing the list of publications should be discouraged.
6. The agencies providing research grants should encourage the grantees to publish the results of the sponsored research in Indian journals. When warranted, short communications may be sent to foreign journals for rapid diffusion, but full-length papers should be published in Indian journals only.

The Science and Engineering Research Council (SERC) of the Department of Science & Technology (DST) recently reviewed some of the above issues and has made certain suggestions. As a follow up, DST has appealed to the Indian scientific community getting its financial support to publish the outcome of the research in selected Indian journals. Further, the project investigators working on DST- and other S&T department-sponsored projects were requested that they should publish at least one paper from the research carried out on the projects in the best relevant Indian journal. DST has also appealed to the senior and established scientists to start publishing in Indian journals to set a trend. A similar action by other S&T departments, funding agencies, government bodies, and institutions may improve the situation further.

We welcome the response from the scientific community.