

the UGC, from where it will be mailed to at least two examiners by masking the names of student, supervisor *and their affiliations*. The evaluation should be strictly on merit. At times rejection of a PhD thesis would serve the purpose because either the supervisors will start taking things seriously or they will

stop guiding any PhD student. It is better to produce only a few good quality theses than to have a number of feeble theses. Thus, only a stringently merit-based PhD evaluation system can help us 'to do justice to science'. This will certainly not only improve post-doctoral research work, but will also

enhance the quality of research in general.

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How to improve the quality of scientific research in India

The article 'Let us do justice to science' by Saad Tayyab (*Curr. Sci.*, 1998, 75, 78-79) was very interesting and throws light on the sorry state of affairs of science in majority of our universities, colleges and research institutions. What has been suggested by Tayyab for healthy and fruitful research is already being followed in some of our prestigious institutions and the results are well known. However, the scientific scenario in universities, colleges and institutions other than those listed is entirely different. Unfortunately, what is happening in the name of research leading to PhD throughout the country is appalling. The number of research papers cited in international indexes will stand testimony to this debacle. Let me cite some of the reasons for this tragedy. For instance, most of the teachers who are carrying out research sincerely are neither benefitted through promotions nor do they get recognition.

UGC and education departments of the State Governments insist on refresher courses rather than high-quality

research. No credit is given to the teachers for their outstanding research, publications, completion of projects and guiding PhD students. There is no relaxation in the teaching work-load for those teachers who carry out research despite their teaching responsibilities. Paradoxically, universities and colleges take the benefit of the work and obtain plan grants from UGC. But these teachers who carry out research, complete projects and guide PhD students are denied their basic academic benefits. For promotions and placement in senior scales, the only criterion is attendance in refresher courses.

I suggest that UGC which governs our universities and colleges must clearly define the benefit of research to college and university teachers and it must instruct the State agencies accordingly. Only quality research work must be encouraged in this regard. Publications of papers in peer-reviewed journals, successful completion of national and internationally-funded research projects, awards and other achievements must be

encouraged. At the same time there should be a uniform policy for research leading to PhD in all universities and colleges in the country. The same practice should be followed for the entry of students into research as is being done at reputed institutions like CCMB, IISc, TIFR, etc. This will allow real talent to enter and restrict fraud and duplication of research. The universities must be bound to have a very strict procedure for permitting PhD candidates and they must face entrance tests or show evidence of research accomplishment after M Sc, as a condition to registration.

Similarly, teachers who want to be guides and experts of the thesis must prove their merit either by independent publications in peer-reviewed journals or by getting a registration through an independent body of experts. Seniority must not be the sole criterion.

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Dogs wagged by bureaucratic tails

I wish to write about a recent experience of mine which I suspect may strike chords of shared sufferance among your readers. Many research investigators have had occasion to be invited for meetings at the Government science departments, either as members of expert committees or for project presentations. Such meetings are most often held in New Delhi. Invitees are left to fend

for themselves with regard to arrangements for local transport and accommodation, and hospitality is a euphemism for the services offered by our national capital in either sphere.

We are also aware that Government regulations on allowances for its officials on tour are quite conservative. For example, the maximum provision for daily allowance is Rs 650 inclusive of

the cost of stay in a hotel. But would you imagine that the maximum for an expert invitee is pegged at Rs 100 per day (which represents just 80% of the entitlement of the least paid Group D employee in the Government)? Invitees who are members of committees considering grant proposals also necessarily have to carry large loads of official documents with them, but they are not

reimbursed local conveyance charges; such reimbursement is otherwise permitted to Government servants under the rules. These anomalies have arisen as the consequence of a strange (mis)interpretation, by which invitees have been classified as 'non-officials'.

Of course there is something amiss here, and it is not enough that the rates for invitees are revised upward. I believe that it is reasonable to demand that invitees for official meetings be treated on par with officers of equivalent rank in the Government. I further believe that the extant rules may easily be re-interpreted more appropriately, or may be rectified by a simple order from the Secretaries of the science departments.

Why has no one complained on this anomaly earlier? I can think of three reasons: ignorance; or a sense of frustrated resignation to the situation; or a subconscious feeling of subjugation to the authorities who dispense our grant moneys. With respect to the second reason, I hope that a voice raised collectively will succeed in being heard; members of the various expert committees may also wish to make this point, and perhaps by adopting even more telling means, in their subsequent meetings.

With respect to the third reason (and although one hesitates to say it), this example might appear to be yet another instance of the bureaucratic tail wagging

the dog. The unconscionable delays that now occur between project approval and release of grant moneys has already been the subject of editorial comment in these pages. We are beholden, not to the babu seated in the finance section of the Government department, but to that poor faceless citizen of India. So, in matter of fact, is the babu.

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Honey bee-resembling flowers of *Arenga*

The report of flowers of *Arenga pinnata* (Arecaceae) mimicking the form of honey bees by P. S. N. Rao and Sampath Kumar¹ reminds me of my Platinium Jubilee Lecture at the Indian Science Congress in 1989 (ref. 2) wherein I mentioned the discovery of the phenomenon of 'pseudocopulation' initially reported in *Ophrys* by an engineer Pouyanne³ and later confirmed by Correvoon and Pouyanne⁴, Godfrey⁵ and Coleman⁶ in flowers of *Ophrys speculum*, *O. apifera*, *O. musciflora* and other orchids. In these cases, the flowers of the orchids mimic the females of insects to males of *Campscolia ciliata*, *Gorytes*, *Lissopimpla semipimetata*, *Paragymnomma* and other insects not only by closely imitating the form and colour of their females but also by emitting the respective female odours so that the males of the species are

deceived to the extent of pseudocopulating with the respective flowers and in that process pollinating them when they visit other flowers. In the case of *Arenga pinnata*, the foragers could not be males of the bee species but workers. It is therefore important for us to know the underlying purpose of the mimicry which lures hordes of bees to the flowers of *A. pinnata*. In contrast, the ordinary functions attributed to mimicry are: safety from predators or deceiving the prey by animals but these are ruled out in the case of the bees and flowers of *Arenga*. Further observations are therefore needed on this interesting phenomenon which could possibly be a chemical attractant as observed by Kullenberg in *Ophrys*⁷⁻⁹.

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