

good speeches. Still we can hope, if proper attention is paid to the realization of the objectives of library reading and seminar courses at graduate and post-graduate levels, the problem of poor presentation might be mitigated and thus the meetings (symposia, etc.) be made more useful. Clearly our attempt should not go towards killing the meetings but towards finding a way to improve their practical utility.

Relevance of big scientific gatherings is comprehensively stated by Y. K. Gupta⁴. However, his comparison of big conferences with an old man is not apt. A professional society and its activities die only when the context and the norms and values on which the society was established are changed in such a way that the society itself becomes irrelevant. The shortcomings that are observed can be improved by appropriate changes in functional style, and bringing efficiency in managerial and organizational aspects.

One aspect of concern which is not raised in the above-mentioned articles and only occasionally touched upon in other writings dealing with various aspects of degradation of science in India is the financial involvement, particularly the cost effectiveness of such scientific activities. A part of the gathering expense is borne by the participants, i.e. by a number of young scientists. Compelled by their desire to build up a career, young scientists are often ready to pay membership and registration fees and bear other expenses to attend these fairs. In return they get an additional line added in their biodata and some inspiration, of course. Many of them also pick up some ideas from the abstract book on their hand and start to work on that line. Whoever the sponsor, most of the expenses incurred in these

gatherings come, in one or the other way, from public money. Nobody cares if the investment is productive and is utilized in a proper way. The non-scientific community watches these events amazed. They understand science in terms of miraculous discoveries that revolutionized their living world. They really do not understand (but still admire) day-to-day activities and the publications of the scientists which are understandable only to a narrow circle of peers with vested interests. And this really makes science expensive and allows wide room for fraudulent work. However, submerged in the mass of bogus scientific activities are a few genuine scientists who frequently find something which not only affects the whole of the human life but is also immensely productive even in monetary terms. And the production of these few scientists supports the whole mass of a fraudulent scientific world and its bogus activities.

Scientific gatherings are inaugurated by some political leader or a high-ranking administrator. Success is often measured in terms of the person whom they could invite for inauguration (closing) or as a chief guest. The politicians should have borrowed and followed the statements of scientific academicians. But usually scientific gatherings prefer to follow a slogan or theme which is in current fashion among the politicians. We do not mean that Indian Science Congress should stop to invite the PM for inauguration but think what a difference it will make if the Congress is inaugurated by a Nobel Prize-winning scientist. It is not unusual to see an academician revolving around a chair held by a politician or an administrator. Gone are the days when the king was worshipped only inside the

boundaries of his country while an academician was welcome worldwide. Today rarely does a scientist dare to become Viswamitra or Durvasa⁵. Instead, even for 'big' scientists, politicians often function as a sacred cow hanging on whose tail they can cross the river Baitarani.

While organizing scientific gatherings, organizers usually aim not at improving science but to show the Government or other funding authorities that they are doing something great. They wish the planners and policy makers to direct financial activities in such a way that their narrow scientific circle gets monetary benefit for whatever they are doing.

In this way there are problems in bigger as well as in smaller gatherings. However, the solution lies not in killing them but in the involvement of the scientists themselves to find a way by which scientific gatherings could meet their real objectives.

1. Ganeshaiah, K. N., *Curr. Sci.*, 1999, **77**, 739-741.
2. Balaram, P., *Curr. Sci.*, 1999, **77** 1005-1006.
3. Chatterji, D., *Curr. Sci.*, 1999, **77**, 1011.
4. Gupta, Y. K., *Curr. Sci.*, 1999, **77**, 1024.
5. Haldane, J. B. S., *Curr. Sci.*, 1999, **77**, 305-307.

MIN RAJ DHAKAL

*Department of Botany,
TM Bhagalpur University,
Bhagalpur 812 007, India
Permanent address:
Department of Botany,
Tribhuvan University,
Post Graduate Campus,
Biratnagar, Nepal*

Nuclear war

I would like to respond to your editorial of 10 November 1999 justifying the rejection of what was most probably my paper on the effects of a hypothetical nuclear explosion over Mumbai, which was submitted in March 1998 upon the

advice of a member of the editorial board of *Current Science*.

There were three main reasons why I thought it was appropriate for the readers of *Current Science*, and the larger scientific community.

1. Thus far, there are no *detailed scientific* estimates of the damage from a nuclear explosion over South Asian cities, which have the special feature, as your editorial pointed out, of being densely populated. Earlier work,

such as the 1956 book by D. S. Kothari, only dealt with general principles of nuclear explosions rather than the numbers of casualties that would result from one of them. Later work by K. Sundarji and Rashid Naim were aimed more at advancing the political argument that nuclear deterrence would hold in South Asia than exploring the details of the human consequences of the use of nuclear weapons.

2. While the literature on the effects of nuclear explosions is as old as Hiroshima, there have been significant advances in the understanding of the superflares started in the wake of a nuclear explosion (in particular, the work by Harold Brode and Ted Postol in the 1980s). Since fire effects and blast effects have different scaling properties, the details of the causes of destruction are important, especially when considering the potential use of large yield megaton bombs. I incorporated these advances and used a range of models to

estimate the number of 'prompt' casualties resulting from an explosion. To the best of my knowledge, this has not been done in any other South Asia specific study. Further, I also included current estimates on long-term effects of radiation that can be used to assess the numbers of cancers, etc. that would result from radiation exposure.

3. The last purpose was to remind readers of the horrors of nuclear war, particularly relevant after the May 1998 tests, and to promote a discussion on nuclear policies and programmes. I also deliberately adopted a pedagogical style in the hope that other scientists and students could use the methods laid out in my paper to do their own estimates on other cities.

Ever since the wholesale destruction of Hiroshima and Nagasaki, legions of scientists have elaborated on the devastating effects of nuclear weapons. But the fact that 'such estimates have been

made before and widely discussed' has not prevented other scientists from doing the same in more accurate ways or in different contexts. Neither has it prevented journals like *Scientific American* from publishing numerous articles on the subject. I feel that if *Current Science* does indeed wish to provide a 'forum for discussion of not only science but also policy and issues that concern scientists' then it should not avoid discussing the effects of nuclear war merely on the basis that such knowledge is not new.

Anyone interested in a copy of my report is welcome to write to me at ramana@princeton.edu.

M. V. RAMANA

*Centre for Energy and
Environmental Studies,
Princeton University,
Princeton,
New Jersey 08544, USA*

Institute of Natural Philosophy and goal of science

The search for truth(s) is the goal of science; harmony, simplicity and aesthetics are the values a scientist seeks in understanding nature. Such lofty ideals have been replaced by treating science as a means to gain (political) power and to satisfy unlimited desires and greed. Since the inception of modern science, its utilitarian aspects and application for developing weapons technology were recognized. However, two events mark almost total identification of science with them: nuclear bomb explosion in August 1945, and TRIPS in GATT-1994. Scientific community debates the role of scientists in society, and there are many concerned and conscientious scientists world-over worried about the misuse and destructive power of scientific knowledge. It seems the fundamental issue has been missed; and it is the institutionalization of defence research and intellectual property rights. If science remains search for truth, there can never be any fear of its misuse, truth can never harm anyone.

I believe ancient Upanishadic wisdom can enlighten us on the value and goal of science. There is no parallel to Nachiketa's quest for truth in the world history of knowledge; he did not fear even death, and could not be tempted by finest of the worldly pleasures; his inquisitive mind was seeking answers to eternal questions, and that was his sole aim. This knowledge now exists in the form of *Kathopanishad*. In *Ishavasyopanishad* we are taught that a balance between *vidya* (atemporal knowledge beyond senses) and *avidya* (temporal knowledge of the physical universe) is essential; *avidya* for worthy and happy living and physical existence, and *vidya* for salvation.

Let us try to learn from this ancient wisdom in the contemporary context: first of all we must revive the idea of natural philosophy for sciences, and then recognize that scientists in their pursuit of knowledge will have to be supported by the society for their basic minimum needs. On the part of scientists, they shall not have ownership on

the scientific knowledge, and shall not work for so-called defence research as well as for commercial purposes. Science in the service of mankind has to be distinguished from science as a trading commodity. If scientists cannot control their temptations for unlimited wealth and stake in political power, any sort of activism against exploitation of science for weapons of mass destruction and unbridled marketism is futile; at the most it may give an illusory satisfaction of having discharged their duty towards society. It was with these ideas in mind that The Institute of Natural Philosophy was founded in September 1998. Though it does not yet have a tangible form, its 'idealistic reality' does exist. I seek advice, help and cooperation in this endeavour from all.

S. C. TIWARI

*Institute of Natural Philosophy,
1, Kusum Kutir, Mahamanapuri,
Varanasi 221 005, India*