

Physical Society (APS) to host a roundtable discussion at the Atlanta Centennial Meeting to identify the role of physicists to build bridges between nations which otherwise may be having conflicting interests on nuclear issues or issues related to physics. Some of us had even arranged discussions on the same issues in our institutions to take advantage of these visitors. To our disappointment, we subsequently learned that the invited speaker from India, T. Jayaraman, was denied leave to participate in the APS discussion by the Director and the authorities of the Institute of Mathematical Sciences, Chennai, where he works as a theoretical physicist.

The reason given by the Institute's Director for his action was that Jayaraman's participation was not in the interests of, '... the Institute and the nation'. Several appeals did not change the Director's decision. Subsequently, the Director stated that as the Institute is under travel restrictions by the US government, and the APS has been unable to remove these restrictions, it would not be appropriate for Jayaraman to participate in the APS panel. On the contrary, the APS has succeeded in re-

moving such restrictions in specific cases and has continued to work for the removal of all impediments to the free circulation of scientists through both public appeals and by close interaction with US governmental agencies.

We feel that the present age compels us to think in global terms and thus the denial of leave to Jayaraman to participate in the panel discussion is a violation of his academic freedom and has done disservice to the cause of promoting international peace. We urge the Director of the Institute of Mathematical Sciences, and the Government of India, to desist from applying such restrictions in the future.

Physicists have an important role to play as promoters of peace. Preventing open scientific exchange injures science as an instrument to advance the international scientific enterprise, to develop comity among scientists, to advance our common culture and to contribute to the welfare of nations.

Signed by: Luis Masperi (Argentina), Luis Pinguelli Rosa (Brazil), T. R. Govindarajan (India), M. V. Ramana (India), Zia Mian (Pakistan), A. P.

Balachandran (India), Jeeva Anandan (US/Sri Lanka), Saeed Durrani (UK/Pakistan), Avner Cohen (US/Israel), W. K. H. Panofsky (US), M. H. Engineer (India), Pervez Hoodbhoy (Pakistan), Irving Lerch (US).

The signatories assert that the statement reflects their sentiments alone and does not represent the official position of their organizations or institutions.

Editors' note:

The above statement was prepared and signed by participants in a panel discussion on 'The Role of the International Physics Community in Arms Control' held on 21 March, in Atlanta, Georgia, at the beginning of the American Physical Society Centennial Meeting. The panel was moderated by W. K. H. Panofsky and included Luis Masperi (Argentina), Luis Pinguelli Rosa (Brazil), Pervez Hoodbhoy (Pakistan), Avner Cohen (Israel and US). T. Jayaraman (India) was denied permission to participate in the meeting even though funds to support his travel had been provided.

Profound scientific base nucleates, nurtures and develops an in-depth technological pursuit

The government decision to reward DRDO scientists with enhanced pay and also to recognize various collaborating institutions for a set of handsome annual awards for development of defence-related technologies is totally non-academic, devoid of real incentive and can hardly be justified. It appears that the entire credit for specially chosen and carefully prepared ingredients for baking a good quality cake under specified temperature control has gone to a maid for strictly following the baking instructions. Indeed, it is a matter of great concern for the scientific and technological community in the country. The government of India should be congratulated for taking the initiative which was not taken so far. The fault lies with the questionable competence and frankness of the advisory system which per-

haps did not muster courage to brief the government officials objectively and warn them of unforeseen and unwanted interpretations^{1,2}. The best way to correct this mistake is to open an in-depth discussion to resolve the issue at hand. The selection of talented scientists, engineers, technologists and supporting staff for special scales and awards over and above the existing scales is an important task. If the selections are made objectively based on well-documented achievements, qualifications and categorical recommendations, it would inspire good students to opt for scientific and technological jobs. Unfortunately, the situation that prevails in the country presently is highly disappointing. As a consequence of this, good students are not opting for teaching, research and development, either in universities or

research laboratories under the government. Seniority of scientific personnel has played the dominant role for promotions, awards and rewards without caring for talent and merit of scholars and employees in scientific institutions and universities.

Barring a few institutions, good research is not done in scientific departments and academic institutions in our country. Academic institutions should be treated on a different footing and all those pursuing teaching, research and development, should be kept on a different scale of pay with a rigorous evaluation system and incentive-based promotions. Their work should be regularly evaluated, awarded, rewarded or they should be warned for lapses using well-debated criteria at the national level. However, the national cri-

teria for developing newer areas of science and technology in the country should be operated on a different level for a fixed period of time. Discrepancies would arise, but this has to be pursued at the national level to foster newer developments by inviting talented persons to join these new departments. The cry of equality and uniformity of pay scales would definitely arise at the national level but it has to be viewed objectively with the help of a well-documented open policy of developing excellence in academic, scientific and technological pursuits. A well-debated and carefully implemented scheme at the national level will certainly attract

many more persons to scientific research and development relinquishing well-paying administrative and managerial jobs. It is high time that the government should take a lead and collect objective opinion and implement it to improve the incentiveless system prevailing in these academic institutions. This will also attract talented Indians serving foreign countries to return and serve their own country. It would certainly be a great tribute to late Homi J. Bhabha for having initiated the plan by visiting foreign countries and talking to many Indian scientists working abroad, convincing them to come back home and help the country. Working in these

prevailing conditions, some of these scientists have succeeded in putting the country on the international map in their field of specialization. Therefore, an urgent activity hankers for an early initiation of a meaningful step at the national level.

1. Balaram, P., *Curr. Sci.*, 1999, 76, 712.
2. Periasamy, M., *Curr. Sci.*, 1999, 76, 1291.

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To tie or not to tie: A knotty problem in snakebite management

In India, every year a large number of people die of venomous snakebites though they can be medically treated by administering polyvalent antivenin. This is because most venomous snakebites occur in villages, whereas antivenin is usually available only in urban hospitals. It often takes the snakebite victim an hour or more to reach such a hospital. During this crucial interim period, the victim is usually looked after by untrained persons. The traditional first aid in such cases consists of one or more of the following: (a) 'tying up' the place above the bite; (b) incision of the affected area; and (c) suction (generally oral) of the contents of the wound. It is popularly believed that tying up would delay the spread of snake venom into other parts of the body, while incision and suction are supposed to remove substantial amount of the injected venom. Thus, the basic idea behind these traditional first aid measures is the belief that these may reduce the extent of damage. Do such traditional methods have any scientific basis? Let us see what standard books written by experts have to say about this.

While most experts are in favour of some kind of tying as a first aid measure, opinions vary as to the kind of tying that is beneficial. Two types of tying have been discussed. The first, a

'tourniquet' which is tied tightly so as to block the return of blood through vessels from the occluded limb to the heart¹. This is also referred to as 'haemostatic' or 'arterial tourniquet' in various books^{2,3}. The second kind of tying, is using a 'construction band', which is firm but not tight, in order to impede lymph flow⁴. This is also referred to as 'firm pressure bandaging'³ or 'constricting band'⁵ or 'constrictive bandage'⁶ or 'crepe bandaging'¹. While most books recommend the latter^{1,3-9}, some experts favour only tourniquets^{2,10,11}. One book¹ recommends tourniquets only in the case of bites by snakes having 'dangerously neurotoxic' venom, 'when the delay in reaching medical care is likely to be more than 30 min but less than two hours', although the same book also points out that 'the value of tourniquets has not been adequately investigated in human patients' and the potential danger of tourniqueting is 'gangrenous limbs' owing to lack of blood flow.

Even in the case of incision and suction as first aid measures for venomous snakebites, medical literature seems to be full of conflicting opinions. While some books^{2,4-7,11,12} recommend incision and suction, others^{1,3,8-10,13} raise objections to such first aid measures. It is interesting to note that later editions

of a textbook^{14,15} omit all mention of this issue. There is also no complete agreement as to the risk factors for the person carrying out incision and suction. While Sanford⁵ says mouth suction is not risky 'in the absence of oral lesions'¹ (in the first aider), Yudenich¹⁶ says it is not dangerous 'even when the helper has scratches on the lips and lining of the mouth'.

It is evident that the standard textbooks of scientific medicine published in 1980s contain conflicting opinions regarding the first aid methods in venomous snakebite. However, most textbooks published in 1990s tend to present uniform views on the issue. For example, in recommending incision and suction, the 1987 edition of one textbook⁴ writes: 'When begun promptly, they (incision and suction) may result in the removal of up to 50 per cent (of) subcutaneously injected venom', while the same textbook in its 1994 edition⁹ says: 'Since there is no evidence that incision and suction of the wound improve outcome in humans, and since incision in the field can cause secondary infection and traumatize tendons, nerves, and blood vessels, this procedure is no longer recommended'. Similarly, while the 1985 edition of another textbook⁵ opines: 'It has been stated that if I and S (incision and suction) is