up as yet another boot-strapping excercise.

An important aspect the editorial leaves out may place the role of awards in research activity in its proper perspective. The pleasure of research is primarily the excitement when the right solution flashes in the mind or gradually emerges through an arduous journey to a finale, punctuated often with failures. This act of creation accomplishes its own reward whose worth cannot be matched by any award. Unfortunately, our science education does not encourage readings which expose lives and minds of great scientists. No wonder that the best of our students consider receiving an award as the ultimate index of excellence. Only a lucky few may encounter a teacher or someone nearer who sensitizes them to the real source of pleasure that drove many scientists even to risk their lives or face social stigma, and not seek awards greedily as we tend to do.

Most present-day leaders of our scientific community grew up with an attitude towards awards that must be unlearnt now if we are serious about the change. I quote from the twenty-two-year-old narration of V.S. Naipaul, now a classic, *India: A Wounded Civilization*. Since obviously, unless corrected, it will also be passed on to the next generation in a more entrenched state, I leave it to the reader to gauge the depth and the gravity of the chronic problem we are afflicted with:

'India grieved for the scientist Har Govind Khorana, who, as an American citizen, won a Nobel Prize in medicine for United States a few years ago. India invited him back and feted him; but what was most important about him was ignored. "We would do everything for Khorana," one of India's best journalists said, "except do him the honor of discussing his work". The work, the labour, the assessment of the labour: it was somehow that would occur elsewhere, outside India.'

An award to a young researcher who is not kindled by the genuine spirit of enquiry could snow-ball for the rest of his/her career if it goes into his/her head; getting awards may become the only objective. With our penchant for politicking and manipulation, and with no effective checks from the mute scientific community, such efforts could succeed in spite of some half-hearted resistances until the practice is accepted by all – so that the only way of getting awards ultimately may be through the back door!

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Olive Ridleys in Orissa: Further comments

With reference to our article 'The Olive Ridley sea turtle (*Lepidochelys olivacea*) in Orissa: The urgent need for an intensive and integrated conservation programme' in *Current Science* (1998, **75**, 1323–1328) we would like to make a few additional points and clarify certain issues that appear to have been misunderstood.

1. We are happy that, after a gap of two years, mass nesting (arribada) took place at Gahirmatha, the major mass nesting site in Orissa. Nesting took place primarily on a 2 km island that is a fragment of the island that broke away from the mainland in 1989 after a cyclonic storm. It is estimated that 210,000 to 250,000 turtles nested during the last week of March on the two islands, Nasi 1 and Nasi 2, mainly the latter. Nesting also occurred on the mainland beach and a new area near Barunei mouth, 30 km south of Gahirmatha, with 8000 turtles nesting in the second week of March and 20,000 turtles nesting on 21–22 April.

However, the mortality figures continued to be high (10,000 dead turtles on the Orissa coast) despite the efforts of the Orissa Forest and Fisheries Department, Government of India and NGO initiatives such as Operation Kachhapa. The absence of mass nesting over the past two years may not be related to high turtle mortalities and therefore, the occurrence of mass nesting should not be taken as a sign that all is well with the turtle population. The changing geomorphology of the Gahirmatha coast may have rendered the beaches unsuitable for nesting. The islands (Nasi 1 and Nasi 2) on which the turtles currently nest are two fragments of the island (Ekakulanasi) that broke away from the mainland in 1989. A substantial proportion of nesting occurs on Nasi 2, the northern fragment, which this year has come into contact with the Outer Wheeler island, where the Defence Research and Development Organization (DRDO) has its missile testing range. Nasi 2 is only 2 km long and only 50–100 m wide throughout its length. The island is inundated during spring tide and a large proportion of the eggs are expected to be lost this year (at the time of writing this piece, field personnel estimated the loss at 80% of the eggs due to inundation and erosion). It is possible that if this beach becomes completely unsuitable for nesting, the turtles will eventually be forced to nest elsewhere. However, it they continue to die at the rate of ten to twenty thousand turtles a year due to trawling mortalities, even this large population will soon become extinct.

The arribada gives us hope, but one should approach the conservation and management of the Orissa turtles with renewed vigour and implement the following measures:

(i) Protection of coastline and offshore waters by monitoring and patrolling key breeding and nesting areas.
(ii) Protected Area status for other nesting beaches at Barunei, Devi River Mouth and Rushikulya.
(iii) Involvement of local fishermen in the conservation programme. We would like to reiterate here that the key to long-term conservation

on the Orissa coast lies in empowering the artisanal fishing community and helping them regain their livelihoods and mobilizing them for the conservation of turtles.

2. We would also like to clarify the positive role played by DRDO in the conservation of the Olive Ridleys. DRDO's missile testing range is on an island adjacent to the major nesting beach (Nasi 2) at Gahirmatha. Over the past three years, DRDO has been meticulous in keeping their lights off during the turtle season. They have also extended assistance to WII researchers working in the area, who have their base on Long Wheeler island, which belongs to DRDO. DRDO has also cooperated by postponing their missile tests until after the turtle nesting season. Further, DRDO's ban on any unauthorized entry into a 6 km radius area around their missile testing range on Outer Wheeler Island would be extremely useful in keeping trawlers away from the breeding congregation. Other organizations (such as Jayashree Chemicals Ltd, Ganjam, near Rushikulya beach) have also cooperated by switching off their lights during the nesting season. It is by cooperation with organizations and individuals who work and live along the coast that we can find a solution for sea turtle conservation.

In conclusion, the occurrence of mass nesting of Olive Ridleys at Gahirmatha in March 1999 was a relief for turtle conservationists. However, turtle mortalities continued to be high despite the efforts of conservation groups and the Forest Department. The various agencies working for the conservation of turtles in Orissa should learn from mistakes of 1999 and work towards ensuring that mortality is substantially reduced in the years to come and ensure that offshore breeding waters and the mass nesting beaches get some measure of permanent protection in the future, particularly during October to May.

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NEWS

Probing fundamental problems with lasers and cold atoms: An Indo-French workshop

The study of the fundamental building blocks of nature is at a turning point. The standard model of particle physics, while highly successful, is destined to undergo several modifications and refinements in the coming decades. Apart from a strong indication from neutrino physics, there are several foundational aspects, including compatibility with gravity, which need to be addressed. The experimental clues required to make progress in this field are expected mainly from three fronts. (a) accelerator-based experiments, which can address some of the issues directly, such as determination of particle mass spectra and direct detection of new particles; (b) cosmology and astrophysics; there are indirect deductions concerning important issues in particle physics (e.g. neutrino physics, unification physics etc.) derived from various astrophysical phenomena coupled with observations on the evolution of the Universe; and (c) high-precision, low-energy, laboratory experiments on a small scale, without the use of accelerators. These non-accelerator particle physics (NAPP) experiments probe particle physics aspects at very low energies, with great precision, to be able to make important statements about phenomena at high energies.

These high precision experiments are driven by novel ideas connecting up the world of high energies to that of very low energies by recognizing phenomena that necessarily involve low energy consequences of high-energy phenomena. Classic examples are proton decay as a consequence of grand unification physics and parity violation in atoms as a consequence of weak interaction between electrons and nucleus.

Significant Indian contributions in NAPP-based experiments were made during the golden era of cosmic ray research. In fact, it is this effort which later laid the foundations for the current accelerator-based research by Indian physicists at international accelerator facilities. Observational high-energy astrophysics is now limited to gamma-ray observations and some air shower experiments. The potential inherent in NAPP experiments in the laboratory to probe fundamental issues which may not be even possible to be addressed using accelerators is yet to be widely recognized and practiced in Indian laboratories.

Recent advances in precision measurements in atomic systems, laser cooling and trapping of atoms, trapping of single ions in electromagnetic traps, atomic interferometry, quantum photon interferometry, ultrasensitive torsion balances, low temperature detectors, etc. are expected to contribute significantly to studies in aspects of particle physics in the next decade. With this in mind, and with a view to starting new activities in non-accelerator physics with tools from atomic physics, optics and other techniques, a discussion meeting was organized in Bangalore by R. Cowsik in 1992. Subsequently a major international conference (ICNAPP 94) was also held in 1994 at the Indian Institute of Astrophysics (IIA) in Bangalore.

During the IX plan, the idea of a centre or laboratory for NAPP activity gained momentum, and the need for a