

# SCIENCE AND CULTURE

VOLUME 67 □ SEPTEMBER-OCTOBER 2001 □ NOS. 9-10

## SCIENCE FOR ALL : SCIENCE LITERACY AND PEOPLES SCIENCE MOVEMENT

**L**AST two decades of the twentieth century have witnessed the earmarking of the days and weeks of the year for special celebrations for national and international causes like World Environment Day, Teachers Day, Childrens day, Mothers Day, National Science Day, National Technology Day, Peace Day etc, various weeks like Road Safety week, Brain Awareness week etc, even the year 2001 has been declared as Woman Empowerment year in as much as, there may not be any more day left in a calender year for future use for another occasion. We have also witnessed catchy slogans with pious hopes like Health for All, Literacy for All, Education as birthright, Freedom of Speech, Informed Consent, Participatory Decision Making, Quality of Life, Environmental Security, Sustainable Development, Right to Information, Transparency in Government and *ad infinitum*. In absence of serious thought about the 'doability' and 'feasibility' of such enormous tasks and the political will on the part of national and international bodies, such proclamations have ended in hollow slogans and ritualistic ceremonies. I am tempted to mention a small incident and remarks by distinguished educationist Prof. Sushil Kumar Mukherjee, heard first hand from his own mouth in a gathering on one such occasion. Once when Prof. Mukherjee was Vice Chancellor of one University, he enquired to the then Registrar of the university about the place of next day's programme of tree planting (part of *Vanamahotsab* or the *Green Week*). Prompt was the reply, "why Sir, it is the same place where the tree is planted every year". Remarkd the V. C. : "But by now, there should have been a forest with hardly any space left". This does not indicate the state of affairs of a particular institution, but is generally applicable for other institutions as well. Even with this back drop, I wish to add one more slogan : SCIENCE FOR ALL.

Science has four faces. First and foremost is its aesthetic face. To know the unknown, the quest for knowledge, the tiny living object i.e. man pondering over the process of creation or the 'creator' itself so to speak,

and now, paradoxially the human brain trying to investigate higher brain functions like consciousness, memory, creativity etc. – this type of activity is an example of supreme aesthetic delight of man. In the form technology, science presents its second face of utility. The third face, an ugly one of destruction we see in the form of many weapons of destruction and mass extermination in war and in peace for selfish causes. The fourth one is most subtle and veiled and is hardly perceived or seen but is there. But this is most important for human civilization and this is the philosophical face of science. Since science can shape our life and can create or destroy civilization, the philosophy of science is and should be part of education and culture. Science should give us a 'view of life' which would show us the 'way of life.' Unfortunately, too rapid progress in technology compared to social sciences in the last two decades has robbed science of its philosophical value. Science (along with technology), the product of best human rational thought, is now alienated from humanity. It is justifiably said to be 'amoral'. But, according to Gandhiji, 'science without humanity' is one of the seven sins of man.

Nobody questions about the usefulness of education. Apart from its utility, education provides the 'joy of learning' and frees the mind of all unnecessary burdens that impair its development. That is why universal education and adult literacy campaigns are laudable. In the limited view, the three R's – Reading, wRiting and aRithmetic – have so far been reckoned as minimum necessary components of such literacy drives. Now, a time has come when science – a general understanding of the nature of 'Nature' – the universe comprised of both living and nonliving components – should form part of the literacy. We are living in an era of technological civilization. Everybody including the man on the street is using the tools of science or enjoying the fruits of technology. One is often bewildered to make a right choice on priority basis of the various options available. One usually goes by the 'ad fads' in print or electronic media. TV has now pervaded our life and robbed us of

creative entertainment and leisure time activities that constitute culture and replaced it with easy nonlaborious passive funtainment. Though TV and internet can be positively used for educational purpose, children usually prefer cartoon or some a little more as edutainment, thus deprived of the joy of reading books. The talk of global virtual classrooms is already on, but there is serious doubt that the kind of bond of affection, idealism and interaction between the teacher and the taught that is established in the regular school system can be substituted by the cyber school.

The media also heavily bombard the target groups with glorification of certain trivialities, may be in food, health and fashion. These are sometimes halftruth or disguised falsehood. Superstitions or simply faith can also be spread by the media amongst larger number of people in a very short time. People are more prone to believe what is preached in print or electronic media rather than to listen to a teacher or a scientist if he speaks on the contrary. Therefore, literacy should now include basic concepts about the universe, the living world and man's place in nature. Give the common man some idea about science, the method of science and some milestones of science like the big bang, the mechanism of heredity, the instability of earth's crust and plate tectonics, the double helix, the basic tenets of living system, matter and energy transaction, evolution, nutrition, diseases and drugs, the computer and internet, human genome map, reproduction and related technology and so on. I would rather prefer to let them have a pinch of philosophy – a kind of 'spirituality' of science (as opposed to faith or religion), through which man can feel his oneness with nature. In providing such science literacy, direct confrontation with religion or faith should better be avoided. Rather provide people with tools of science – rational thinking, nonacceptance of anything on faith without verification or justification and they will decide what to accept as what to reject. It is paradoxical to see even some practising scientists succumb to believe so called predetermined destiny or fate and wear gems to pacify unfavourable planets and stars. On the other hand, a very specialized scientist, say in molecular genetics, can be a genetic fundamentalist putting too much faith on the fate map of a man determined by his genetic make up. Here is

the need that the educated man becomes really 'cosmopolitan' in mind and open to ideas that not only genes affect culture but culture maleates genes. It is the irony of fate that the three major religious groups, namely Christians, Jews and Muslims fighting against each other had their religions originated in the same small region of central Asia and genetically are cousins. Mass science literacy can go a long way to mutual tolerance and curbing fundamentalism.

In such science literacy programme, a glimpse of the history and sociology of science through ages in different cultures – oriental, Greeko-Roman-Islamic, and the causes of their rise and fall – should be provided. Thus only we can understand science in culture and culture in science. It is surprising that in Indian universities, there is hardly any position of a professor of History of Science, or a Professor of Public Understanding of Science.

In the science popularization movement, it is generally felt to be enough to give popular lectures or write articles in simple language about the latest discoveries and methods of science. This sounds like something thrust upon the people, like someone (Government, private speakers/writers, NGOs) are givers and people takers. To me, mass science movement means a little more – it is science for the people, of the people and by the people. People may be given the idea that science can be discovered and practised not only in high tech airconditioned labs, but also by a common man in the fields, in the jungles, in the mountains, in the rivers. All that is needed is a curious mind, an observant eye and a sense of measurement. Thus much knowledge – new, important and useful – can be generated by a farmer, a fisherman, a bird watcher, a student, a teacher, a doctor or simply a "Gaonburo" on agriculture, health, climate, flood, soils, biodiversity or conservation. People at large can be the resource persons and nature their laboratory.

People should be made literate in the recent development of biotechnology, information technology, reproductive technology with their promises and pains. They should be able to give informed verdict to tell what should be done or not done. Scientists will only say what is doable and at what cost. There lies the future of man, science and culture. □

*R. K. Mandal*