

Planning Commission, New Delhi) on 'Globalization and science in India'. It was dedicated to the memory of late Sivaraj Ramaseshan, the editor of this journal for a long time. Ahluvalia said that India lagged behind in quality of science research despite having the third largest pool of scientific manpower. Research work was mostly restricted to a few institutions instead of at the Universities. There is therefore a need for a change in the working of the universities by introducing innovative methods. He emphasized the need to support new research. The private sector should support research and deve-

lopment, as public sector alone could not do the job. There was a vast global market for India-made generic drugs.

The second lecture was by Veer Bhadra Mishra (Banaras Hindu University) on 'The Ganga at Varanasi and the travail to stop her abuse'. The speaker drew attention to the fact that the pollution of Ganga is due to the industrial revolution and unplanned urbanization. Varanasi, situated on the banks of the river Ganges with a population density of 100,000 per square km in her denser parts, is largely responsible for polluting the river. Responding to the challenge posed by the polluters, a lone vol-

untary organization in Varanasi is carrying out a private-public venture on partnership basis to arrive at a technically appropriate and economical solution to remove the major pollution of the Ganges in Varanasi.

The teachers invited from various parts of the country met for a brief session where the science education activities of the Academy were discussed.

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Recent trends in applied biology*

During the last five years, products, processes and services in the field of biotechnology and bio-informatics in India have become a reality. The medical world has heavily depended on mute creatures used for experiments in laboratories. Millions of animals are killed to prepare medicine, nail polish, lipstick, floor polish and a number of other things. Keeping all these as the focal point, the seminar discussed various aspects of biotechnology and cruelty to animals. The technical programme was covered in two sessions to discuss various modern trends in biotechnology and alternative methods for laboratory experiments. About 300 persons from Tamil Nadu, Kerala, New Delhi, Gujarat and Mumbai attended the seminar. Three specialists presented their views on select topics. This seminar was supported by UGC, New Delhi.

In the first session, Nike Jukes (InterNICHE, UK) emphasized the need for developing alternative methods for laboratory experiments instead of killing mil-

lions of animals and highlighted points such as that all animals should have freedom to express full natural behaviour, be a part of the social structure and ecosystem, freedom from hunger, thirst, discomfort, pain, injury and distress. It is possible to meet the standards of teaching objectives of life science practical courses using humane alternatives that involve no harm to animals. Film and video models, mannequins and simulators and multimedia computer simulations are the possible alternatives. This approach is gaining momentum, supported by developments in technology and evolution of ethical thought. The alternative would have multiple positive impacts, as the students, teachers and animals would be benefited by it, he said.

In the second session, Achuth Sankar S. Nair (C-DIT, Thiruvananthapuram) spoke about the scope of bio-informatics. He elaborated upon the use of bio-informatics that is based on information technology for acquisition, storage, visualization, management, distribution and analysis of molecular biology data. G. M. Nair (TBGRI, Thiruvananthapuram) highlighted that modern biotechnology constitutes a growing range of techniques, procedures and processes. The confluence of classical and modern technologies enables creation of

new products and highly competitive processes in a large number of industrial and agricultural activities as well as in the health sector. This would provide the impulse to radically transform the competitiveness and growth potential for a number of activities and open up new possibilities. To increase agricultural productivity, in an environmentally sustainable manner, in the face of diminishing land and water resources is a highly challenging task. Knowledge-based approaches including crop genomics can provide powerful solutions and enhance food security, by improving local agricultural productivity, minimizing the use of chemical inputs such as pesticides and fertilizers, insulating crops against losses from diseases and pests, curtailing post-harvest losses including food spoilage, improving food quality and nutrition, increasing crop tolerance to stress factors such as drought and salinity problem, and through the production of value added products.

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