

As the world stands divided on GM foods, the IAASTD emphasizes on 'agro-ecological' strategies to address environmental issues, integrate traditional, community-based knowledge, create opportunities for the poor farmers and include social scientists in the policy-making process². Genetic engineering seems to be a promising technology for fulfilling the larger needs of the coming generation. However, it is imperative to take safety measures in order to guard biodiversity at large.

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Scopus awards to young Indian scientists

Scopus®, the largest abstract and citation database of peer-reviewed research literature and quality web sources, announced on 8 December 2007, the Second Young Indian Scientist awards. The awards, instituted by Elsevier, a well-known publisher of scientific, technical and medical information products and services, were given away to nine young researchers in the presence of Theo Groot-huizen, S&T Counsellor, Royal Dutch Embassy. The researchers had been selected by a jury that included subject ex-

perts, senior academicians and Scientometricians.

The awardees included: Bakhtisaran Raman – Biological Sciences, Centre for Cellular and Molecular Biology, Hyderabad; Anil Kumar – Chemistry, Indian Institute of Technology, Bombay; S. K. Satheesh – Earth Sciences, Indian Institute of Science, Bangalore; Sanjay Mital – Engineering, Indian Institute of Technology, Kanpur; Dinesh Mohan – Environmental Sciences, Industrial Toxicology Research Centre, Lucknow; Upa-

drastha Ramamurthy – Material Sciences, Indian Institute of Science, Bangalore; Nimish A. Shah – Mathematics, Tata Institute of Fundamental Research, Mumbai; Sushil Kumar Jha – Medicine, Jawaharlal Nehru University, New Delhi, and Vinod Kumar Aswal – Physics, Bhabha Atomic Research Centre, Mumbai. The awards were for young scientists not more than 40 years old. The award carried a citation, a crystal plaque and a cash award of Rs 50,000.

MEETING REPORT

Sea faring traditions of the Indian west coast*

The Third S. Ramaseshan Memorial Public Lecture was delivered by the noted historian, Lotika Varadarajan during the 73rd Annual Meeting of the Indian Academy of Sciences (IASc), Bangalore held at Thiruvananthapuram. D. Balasubramaniam, President of the Academy,

in his introduction stated that the lecture series was conceived to honour S. Ramaseshan, who he described as a 'doer of science'. Ramaseshan's greatness lay in the manner in which he blended his quest of science with societal commitments. Hence, it is no surprise that Ramaseshan's contribution to science is multi-fold, illustrated to some extent by the journals of the Academy, notably *Resonance* and *Current Science*. The IASc has an established tradition of inviting experts from other fields to its Annual Meetings, primarily to underpin the re-

gard that it accords to knowledge and learning. And keeping with the tradition, Lotika Varadarajan presented her work of a number of decades titled 'Sea faring traditions of the Indian west coast'.

Describing herself as a historian who rediscovered herself after working on cultural processes, Varadarajan set the tone of her talk by stating that she truly enjoyed working on seafaring traditions. The method used for the study was the analysis of a composite body of chronological, material and oral sources. That India has never been a seafaring nation is

*A report on the Third S. Ramaseshan Memorial Public Lecture delivered on 4 November 2007 during the 73rd Annual Meeting of the Indian Academy of Sciences, Bangalore, held at NIIST (formerly RRL), and SCTIMST, Thiruvananthapuram.

a myth, strongly reinforced by the focus that has been given to the Indo-Gangetic Plains, much to the neglect of the east and west coasts. This erroneous notion is dispelled by the immense diversity of organisms, including humans that societies in the west coast of India exhibit. For instance, the trade of implements and tools made of iron between the Deccan and Rome highlights the seafaring tradition of India. Glimpses of this may also be derived from Jainism, where water is one of the seven sacred symbols, and also the story of Rani Trisula, who dreamt of a ship, murals of which are etched in Mount Abu.

India was in many ways the transit or intermediate point of movement through the sea. Inferences on this can be derived from the movement of humans from Indonesia to populate Madagascar, and also the presence of fishing nets of Chinese origin in Kerala and a number of artefacts of Mongoloid origin in the Pacific Islands. Ethnobotanical studies and the study of artefacts, notably textiles could throw more light on this.

Ancient seafarers preferred the Arabian Sea, especially for seasonal trading during the northeast monsoon. The Bay of Bengal, in contrast, was less preferred because of higher temperatures, shallow seas and coral reefs close to the shore. It is interesting to note that ancient trade routes through the Arabian Sea extended up to the Mediterranean, and continued to be in use until the recent past. The seafaring tradition of India though was completely unlike that of the West. This knowledge and its components were preserved as an oral tradition, disseminated and assimilated through signs and gestures. Similarly, the know-how of boat-building and navigation also largely existed as oral tradition. In Gujarat, boat-building was well developed. Reed boats, clammed boats with oars and rudders were made even as early as AD 1300. The

sternpost rudder, which was typical to Gujarat boats, evolved much later in Europe and other parts of the West. Typical timber that was used for boat-making included sal in the east coast, and eini in the west coast. Contrary to what is popularly perceived, teak was never used for boat-making. It is also noteworthy that boats with complex levering systems were made and used along the west coast. Supporting this was the retinue of elephants to ferry goods, and dry dock facilities at fairly regular intervals. India also had a complex system of ship to shore boats, thereby making it unnecessary to have ports. And ports, if any, were used only to collect taxes.

Assembling of boats was done using two methods – a skeleton was first made using a template and then planking lengths were forged using rabbit joints (also known as the Vadhera joint). While across the world, the line method was used to make boats, the west coast and parts of Andhra Pradesh used the stitched method. The origin of stitched boats has since been traced to the Lakshadweep Islands.

Some of the original boats that were developed in India include the outrigger boat (which is supported by floats), crafted by the Onge tribes of Nicobar, who practised controlled heating to make boats. These boats were also used in Goa along with the dug-out central boats. The use of girdles and knots similar to the Spanish windless also typified the early boats of the west coast. Kerala has had the tradition of using sails, and it is interesting to note that the hand-woven Indian sail cloth (dungaree), was exported to Europe for many years.

In Kilkarai, also known as the Palk Strait, Tamil Nadu, the vattai and the vattam were traditional boats. The use of vallah or the balance board was essential because the zone had a shallow berthing area due to the coral reefs.

Examples of cartography and instrumentation are well illustrated from the island of Kavarati in the Lakshadweep. Islamic in origin, it entailed a calendar system and there were schools of nautical instrumentation on the island; the knowledge that was imparted here was not static. The system used the method of tracking the Pole Star for direction. Stars such as the Great Bear and the Southern Cross were studied over 12 h periods. The Portugese referred to this system as Polygada, while in the islands it was known as 'Kamal raapalagai'. The Davis quadrant which is used currently is but a refined version of the raapalagai. It is well known that the quadrant was used around 5th century in India for estimating the extent of land. Navigation instruments were also supported by fishing calendars, some of which are in use even today. Indigenous ratters and guides to sailing dated AD 1644 have also been discovered from the west coast. These form the basis of current navigation instruments. This knowledge was used for trading timber, ivory, teeth of hippopotamus and spices; the cowrie was used as money. Some smugglers from Billmoria, Gujarat ferried dates from the Gulf and beyond. Sailors and traders from Bengal had the ingenuity of loading even cannons on boats.

By presenting the different kinds of traditional Indian seafaring crafts constructed on the west coast, the cross-cultural relics embedded in these and methods of traditional direction-finding at sea, Lotika Varadarajan effectively encapsulated the glorious, yet unrecognized seafaring tradition of India.

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