

Venkataraman Radhakrishnan (1929–2011)

V. Radhakrishnan, who was a major figure in the world of radio astronomy and headed the Raman Research Institute (RRI) in Bangalore as its director from 1972 to 1994, passed away early in the morning of 3rd March 2011. Rad, as he was widely known, grew up in Bangalore, taking a B Sc in physics at the Central College of the Mysore University – his only degree till an honorary doctorate from the University of Amsterdam in 1996. His early fascination for radios and motorcycles grew into a lifelong love and deep understanding of all kinds of gadgets and machines, not just electronics which was a forte. His other great love was travel. Setting forth from India in his early twenties to seek his destiny, he found it in the very young field of radio astronomy, joining the Onsala observatory of the Chalmers Institute of Technology in Sweden in 1955 on the strength of his technical skills. He worked with the 21 cm line, then a new tool for exploring neutral atomic hydrogen in interstellar space. This spectral line and fluent Swedish stayed with him all his life.

The next move was in 1958, to the Owens Valley Radio Observatory of Caltech, USA, where he took part in basic work on the study of polarization of radio waves and radio interferometry. He and his collaborators were able to view the magnetic field of Jupiter and the rotation of its interior to which the field is anchored. He took part in early work at Owens Valley on combining emission and absorption of the 21 cm line to deduce the physical conditions in clouds of atomic hydrogen in our galaxy.

Rad next moved to the CSIRO Division of Radiophysics in Australia by sailing across the Atlantic and Pacific in 1964–1965. At the Parkes Observatory in Australia, a major programme of studying emission and absorption of the 21 cm line was launched, providing a strong observational underpinning for the concept of a multiphase interstellar medium. The detailed account of this work filled an entire volume of the *Astrophysical Journal Supplement*. A classic observation of the polarization swing of the Vela pulsar formed the basis for the widely accepted magnetic pole model for pulsar radio emission. In all this work, Rad was particular to ensure full credit to his

many collaborators, including the people who joined him in building the instruments that made the science possible. He became widely known for his original approach to astronomy and instrumentation which was exacting and closely thought out, but entirely devoid of mathematics – this was greatly valued even by colleagues who thought in more conventional modes.



In 1972, Rad accepted an invitation from the RRI Trust to return to India and head RRI which was undergoing a revival after C.V. Raman's death in 1970, with funding from the Department of Science and Technology, New Delhi. Under his overall leadership, RRI grew from essentially zero strength to establishing successful programmes in radio astronomy and liquid crystals, the latter spearheaded by S. Chandrasekhar, who moved along with colleagues and students from the University of Mysore. Rad himself assembled, trained and inspired a group which built sophisticated instrumentation and undertook many projects over more than three decades. There was a major collaboration with the Indian Institute of Astrophysics, Ch. V. Sastry in particular, in building and using two low-frequency radio observatories at Gauribidanur and Mauritius. A 10.4 meter dish and receivers, working up to the carbon monoxide line at 115 GHz was a major achievement of the laboratory, headed by N. V. G. Sarma. Rad enjoyed a special relation-

ship with Govind Swarup who founded the radio astronomy group of the Tata Institute of Fundamental Research (TIFR). He worked with the Ooty radio telescope, and strongly supported TIFR's Giant Metrewave Radio Telescope project in kind, with some critical front ends and back ends being built at RRI in the 1990s.

With his students and colleagues, Rad worked on many aspects of pulsars and the interstellar medium. A survey of low-frequency recombination lines with Anantharamaiah, the proposal of recycled pulsars with Srinivasan, and a model for the Vela pulsar X-ray emission with Deshpande, are some examples. Rad enjoyed the respect of astronomers from all over the world, who responded readily to his invitation to visit RRI. He delivered the invited discourse on pulsars at the General Assembly of the International Astronomical Union in 1985, the Milne lecture of the Oxford University (1987), and the Jansky lecture of the NRAO (2000). He was elected a foreign fellow of the US National Academy of Sciences and the Royal Swedish Academy, and was a member of advisory bodies of major observatories in Australia, the Netherlands, and the US. He served as the President of the URSI Commission on Radio Astronomy. Vice-President of the International Astronomical Union, and also served the Indian Academy of Sciences, Bangalore in many capacities for two decades.

A few words on his style of leadership would not be out of place. He strove to build a unique working atmosphere at RRI, in which theory, experiment, instrumentation and observation were not separate compartments, and the staff members were not divided by classification into academic or technical. He worked towards this goal by searching, questioning, intense discussions and setting a strong personal example, characterized by close attention to detail and concern for members of the institute as individuals. This necessarily called for extensive talking and listening to many people, about science and other things, which he always seemed to find the time for. In important matters, Rad took all calls himself, viewing committees and consensus as ways of evading individual judgement and responsibility. Though

this is not the place to dwell on details, some of his decisions in the early nineties raised widespread controversy in the institute and the wider community. What is relevant is that the episode and its aftermath did affect him deeply, and must have influenced the course he set for himself after he stepped down from the directorship of RRI in 1994.

Starting from the 1990s, Rad took up building and flying microlight aircraft. In his last decade, he went back to the sea, building a twin-hulled sailboat of his own novel design. Well after his 80th birthday, Rad sailed it to Oman, then back

westwards to Malaysia, with a clearly stated intention of going all the way round the globe. This period involved working with a completely different group of people, all far younger than him. He immersed himself enthusiastically in these new worlds, keeping his scientific interactions selective. Those who had seen his meticulous planning and design in earlier years were surprised and even alarmed at some of the risks he took while sailing, though always with a manner of relaxed confidence. This was surely not out of ignorance of the possible consequences, but seemed more like

readiness to accept them – he often said he would love to be lost at sea. But death finally came to him at home in Bangalore, after a conference dinner in which he was completely his usual self.

Rad leaves behind his wife Dominique and son Vivek, who is married to Namrata, with two daughters.

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MEETINGS/SYMPOSIA/SEMINARS

National Seminar on Future Prospective of Natural Products and Food as Medicine

Date: 1 and 2 April 2011

Place: Thanjavur

Objectives: Natural Food and Products, Medicinal Herbs and Plants, Phytotherapy and Biomedicine, Food Hygiene and Health, Cultivation of Medicinally Important Plants (including *in vitro*), Pharmacological Screening, Medicine from Marine Origin.

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Humboldt Kolleg and International Conference on Recent Advancements in Earth Resources Research – The Road to the Future (Earth – Future)

Date: 7–9 September 2011

Place: Salem, India

Aim: To review the status of earth resources, analyse the implications of current rate of their utilization, take stock of current understanding on the need to conserve them and to suggest strategies for future sustenance of human society.

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