C. V. K. Baba (1937–2006)

Chanduri Venkatasathya Kusumahara Baba – a great teacher, physicist and above all, a great human being – died on 5 December 2006, in Hyderabad. A few months before his death, he was diagnosed with lung cancer. He is survived by his wife, daughter and son.

Babaji, as he was known to his friends and admirers, was from the first batch of the Department of Atomic Energy Training School. After completing his training he joined S. K. Bhattacherjee's group at Tata Institute of Fundamental Research (TIFR), Mumbai in 1958. His main area of research, in the early days, was nuclear spectroscopy using radioactive sources. He did several measurements of nuclear lifetimes, magnetic moments, beta–gamma angular correlations, conversion electron coefficients, etc. Almost all the equipment needed was home-built, including many valve-based electronic modules wired together by Babaji himself.

Babaji visited Niels Bohr Institute twice, first in 1962–63 and then again in 1979–80. He spent two years at the Technical University of Munich from 1970, where he proposed and did a measurement of the difference of two g-factors in ^{210}Po using the perturbed angular correlation technique. After his return from Munich, Babaji decided to shift to Bhabha Atomic Research Centre (BARC). This move helped start an accelerator-based nuclear spectroscopy programme at the Van de Graaff Laboratory, Trombay. In the late seventies and early eighties only a few experiments were done, due to problems with the 5.5 MV Van de Graaff. This, however, did not dampen his enthusiasm and Babaji took up different problems such as assignment of a radiative decay from an isomeric excited state in the negative ion of Li, search for particle-bound polyneutrons in the fission of ^{236}U, search for a difference in the radii characterizing the neutron and proton mean-fields using the beta decay of ^{209}Tl, search for the light axion in radiative neutron capture by protons at the 220 MW Tarapur reactor and in the M1 decay of ^{13}C.

Babaji often provided neat and simple solutions to problems. The horse-shoe magnets used in vacuum discharge gauges came to be known as 'Baba Magnets'. Put at appropriate places on the beam line they helped steer the charged particle beam onto the target. Recently, nearly thirty years after his original innovation, they were also used to reduce the secondary electron background from the superconducting RF cavity, while making time-profile measurements of the LINAC beam at TIFR. Babaji also devised a simple technique to scan the

excitation function in a nuclear reaction by ramping the reference voltage of the analysing magnet and hence the energy of the analysed beam from the Van de Graaff accelerator at Trombay. This trick reduced significantly, the labour and systematic error in such measurements. Baba's own view was that it was not significant enough to write this up for publication. However, it was recorded in a paper by his colleagues and he was quite happy with a mere mention of his name in the acknowledgement.

He later collaborated on high energy gamma-ray experiments first at VECC, later at the TIFR Pelletron and finally at the Pelletron at the Nuclear Science Centre (NSC), Delhi, now known as Inter University Accelerator Centre (IUAC). At NSC, Babaji suggested a solution to a problem that was encountered while using the large NaI(Tl) detector. The large crystal was viewed by several photomultipliers whose recommended voltage for best energy resolution was not enough for the fast timing needed to discriminate against neutrons by time-of-flight. His idea of increasing the high voltage on the central PMT for good timing worked out nicely.

Babaji was open to unconventional ideas about experiments suggested by other group members, the 17 keV neutrino search in the beta decay being one such. Indeed this was the first experiment that cast doubts about the existence of the 17 keV neutrino. After the Pelletron started operating at TIFR, Babaji started studying heavy ion reactions around the Coulomb barrier. He moved back to TIFR in 1983. He was an active member of the TIFR collaboration with Pune University for the M Sc (Physics) programme during 1987–89. At least 4–5 of these students pursued nuclear physics at TIFR.

Babaji worked closely with students often sharing his table with them. He would ask them to remain alert during an experimental run, especially spotting problems or malfunctions. He was friendly, straightforward and encouraged students to be open and ask questions freely. He often quoted the statement of Niels Bohr to his students, 'there are no stupid questions, only stupid answers'. He always explained to students in simple, understandable terms what the problem or phenomenon at hand involved. Discussions involving Babaji were always animated; everyone got caught in the excitement of how good physics is done. Babaji's contribution goes well beyond his published work. He created a network of well-trained and motivated young physicists. More importantly, his love of doing science infected everyone around him. He was extremely popular with his junior collaborators and friends.

In the last decade after his retirement, Babaji used to spend time at NSC giving lectures on nuclear physics to the Ph D students there. He also lectured at several university departments, which was arranged by NSC. He never refused an invitation to lecture to students and gave short courses in many universities and colleges. In his interactions with theorists, Babaji contributed much to their understanding of experiments. He even collaborated on purely theoretical projects; this included such varied topics as neutrino physics and the quantum Hall effect. Listening to his booming voice in total contrast to his small frame was always a pleasure, whether in discussions or in a lecture.

Babaji had a pivotal role in most of the major projects in nuclear physics in the country. He was an active supporter of the on-going effort to build an underground laboratory devoted to neutrino physics. He did the early groundwork

with some colleagues at the Institute of Mathematical Sciences, where he was a regular visitor after his retirement from TIFR, to identify the site for locating the underground laboratory. The choice of the magnetized iron calorimeter detector as the main detector was also in no small measure due to him. Making a success of this project, including the other planned experiments there, such as the neutrinoless double beta decay experiment (with the ^{124}Sn cryogenic bolometer), would be a fitting tribute to his memory.

Above all, Babaji was a great human being loved by his colleagues, students and just about anyone who got to know him. He was vehemently opposed to the misuse of Science; in particular, when nuclear tests and weapons were justified in the name of science and security. He enjoyed listening to music especially North Indian classical music, and maintained a large personal collection. He had also learnt to play the violin.

Babaji will always be remembered not only for his own significant contributions to physics, teaching and to the environment of doing good science, but also for the way he helped so many people to realize their innate potential.

ACKNOWLEDGEMENT. I thank Vivek Datar, D. Indumathi, Vandana Nanal and G. Rajasekaran for help.

M. V. N. MURTHY

The Institute of Mathematical Sciences, Chennai 600 113, India
e-mail: murthy@imsc.res.in

B. S. Venkatachala (1933–2007)

Bangalore Srinivasa Rao Venkatachala, the eminent palaeobotanist, passed away on 15 June 2007 in Dehradun after a brief illness. Venkatachala, 'Chala' to friends and colleagues, was born on 2 January 1933 at Bengaluru (Bangalore), a major seat of learning and nurturing of the scientific temper in the country. After graduation from Bangalore, young Venkatachala migrated north to Lucknow in 1954 and joined Birbal Sahni Institute of Palaeobotany (BSIP) to pursue research work on fossil plants. The institute was then founded only a few years ago by the eminent palaeobotanist/botanist Birbal Sahni, as a major centre of excellence in palaeobotanical research.

In BSIP, he trained in palynological investigations with D. C. Bhardwaj. He wrote his doctoral dissertation on the 'Palynological investigations of some of the Upper Palaeozoic coals' working on material from German coal-seams, which earned him the doctoral degree from the University of Lucknow in 1959.

Venkatachala visited Petroleum Geology Research Laboratories in Rumania, Hungary, Canada and USA during 1961–62 as a United Nations Fellow under UN Development programme. In USA, Chala worked at Oklahoma Geological Survey, Norman Oklahoma with Leonard R. Wilson. In 1967, he left BSIP, and joined ONGC to develop and strengthen the palynology laboratory, where he rose to the position of Chief Palynologist. In 1985, he rejoined BSIP and worked there for more than eight years.

He will probably be best remembered for his many landmark and seminal papers and books as well as his prodigious scientific output. He was certainly an achiever of the highest order. His research and publications were rigorous and scientifically grounded. He was a good writer and editor, and was always happy to improve the quality of manuscripts of fellow colleagues and researchers who

approached him. Venkatachala expected excellence not only from himself, but those working with him. He instilled in his co-workers a strong work-ethics and commitment to be the best. Working under his supervision was not easy. He was ever demanding but at the same time deeply concerned, affectionate and helpful. One could not ask for a better advisor than Chala. Despite differences, he could bring all persons of the organizations together. Among his significant contributions, mention may be made of the discovery of organic remains in the Archaean Dharwar sediments as well as Precambrian Kaladgi and Bhima sediments that helped in establishing the palaeobiological potential of these rocks. Subsequently, identification of similar fossil assemblages from the subsurface sediments of the Ganga Valley has resolved complex stratigraphic problems. His collaborative works on Gondwana palynology produced standard zonation schemes for the North Karanpura coalfield, biozonation of the Late Jurassic–Early Cretaceous sediments of Kutch, and demarcating Permian–Triassic boundary in the Purnea basin. Another significant achievement of Venkatachala is the initiation in India of the source rock palynology which evaluates hydrocarbon source potential on the basis of total organic matter in the sediments. His studies on marker pollens from India and Tropical Africa established floral migration and extinction during the migration of the Indian plate during Paleocene and Eocene. Later in his career, Venkatachala became interested in subjects such as origins of life, advent of land plants, greening of the earth, and origin of the angiosperms.

Venkatachala served on many executive and editorial boards/committees of several learned societies. He also received several awards, including the Birbal Sahni Medal of the Indian Botanical Society (1992), Palaeobotanical Society International Medal (1993), Commemorative Foundation Medal of Cell Biology and Micropalaeontology Laboratory, J. A. University, Hungary (1997) and BSIP Lifetime Achievement Award (2006), to name a few. He was the Vice-President of the International Federation of Palynological Societies (1989–92) and a Fellow of the National Academy of Sciences of India.

As Chief Editor of *The Palaeobotanist*, Venkatachala persuaded established researchers to write for the journal and many academicians contributed towards the thematic volumes brought out on his initiative during his second tenure at BSIP. One of the major achievements of Venkatachala was bringing together the vast scattered information of palaeobotany on evolution and biostratigraphy through reviews. He had the knack of connecting the present with the past. He