Bal Krishan Anand passed away on 2 April 2007 at his residence in Delhi. With his demise an era in the history of Indian physiology has come to an end.

Anand was born on 18 September 1917 at Lahore, in a not-so-affluent Punjabi family. He graduated in medicine in 1940 from King Edward College, Lahore. He did his MD in medicine in 1948, from the University of Punjab, with a special paper in physiology. In 1951, Anand went to Yale University, USA, to work in the neurophysiology laboratory of John Fulton, as a Rockefeller Foundation Fellow. Fulton had been credited with the discovery that lesions in the frontal lobe of the brain can reduce intractable pain.

Fulton assigned the task of guiding Anand to John R. Brobeck, to learn the stereotaxic brain surgery technique in small animals. His association with Brobeck changed Anand’s destiny. Brobeck acknowledged in his Presidential address to the American Physiological Society in 1971, the influence that this younger colleague had on his own career: ‘Although my training took place in the laboratories of three world-class scientists, Ranson, Fulton and Long, the predominant influence on my career was not the heads of the laboratories so much as the younger persons they attracted to work with them’.

Brobeck taught Anand how to destroy one specific part of a rat’s brain (ventromedial hypothalamus) through stereotaxic surgery. Brobeck had, by then, established that the loss of this tiny part of the brain makes the rat eat more than normal and put on weight. Brobeck gave Anand six rats to repeat the procedure, all by himself. Anand repeated the procedure with meticulous precision. But, the effect was just the opposite. Instead of an increase in their food intake, the rats stopped eating and lost weight. On careful examination of the entire operative procedures, they discovered that there was a defect in the lesion-making instrument. Instead of the small lesions restricted to the ventromedial hypothalamus, the instrument was producing large lesions that were encroaching on the adjoining brain areas. Anand and Brobeck worked out a hypothesis that there is another area in the brain near the ventromedial hypothalamus, the destruction of which made the animals stop eating. In order to test this hypothesis, they made small lesions in the neighbourhood of the ventromedial hypothalamus. Among all the areas that they destroyed, the lesions of the neighbouring lateral hypothalamus made the animals stop eating. Their hypothesis that ‘there are two mechanisms in the brain located in the hypothalamus, very near each other’, seemed to be correct.

However, more remained to be explained. If the ventromedial hypothalamus tells the animal to stop eating, and the lateral hypothalamus makes it eat, then why should lesions of both make the animal stop eating? Brobeck and Anand proposed that the lateral hypothalamus, which makes the animal eat, is tonically active. The lateral hypothalamus is under the inhibitory control of the ventromedial hypothalamus. When the animal eats (and when it is satiated), the ventromedial hypothalamus exerts an inhibitory control over the lateral hypothalamus and makes the animal stop eating. The mechanism works in the opposite direction when the energy reserves of the body go down. In this situation, the ventromedial hypothalamus stops the inhibitory control of the lateral hypothalamus. This makes the animal feel hungry and start eating, if food is available, or to look out for food if it is not readily available. Brobeck and Anand proposed that the big lesions destroyed both these areas (i.e. the one which tells one to stop eating, and the other which makes it eat). The work of Anand and his colleagues in India at the All India Institute of Medical Sciences (AIIMS), New Delhi and many others throughout the world, showed that there is substantial merit in this argument.

The discovery of feeding centre in the rat hypothalamus may appear like a chance discovery arising from a faulty instrument, but in reality, the findings were the result of hard work, dedication and intellectual honesty. Anand had the option of continuing his work at Yale, but decided to return to India in 1952. By then the Government of India had decided to set up a centre of excellence in medical research, teaching and patient care at New Delhi. Anand was inducted into a group constituted to work out the plans for setting up this centre. The plan materialized in 1956, and AIIMS was established. Anand became the first Head of the Department of Physiology at AIIMS.

Anand built up a strong Department of Physiology at AIIMS, which continues even today as the most productive department in the field of physiology, not only in India, but in this part of the world. Details about the control mechanism of food intake were worked out by Anand and his colleagues in India at AIIMS. Anand was also fortunate in getting some excellent, devoted youngsters to work with him. At AIIMS, he not only continued on his earlier work on hypothalamic regulation of food intake, but also extended his studies to the limbic system and regulation of reproduction. Anand and his colleagues did some pioneering studies on yoga, which continue to be quoted even today. He encouraged studies by his colleagues in areas other than his own field of work, like cardiovascular control and sleep research.

The need for a better understanding of high-altitude physiology was felt by the medical fraternity of India, especially the Armed Forces Medical Service, in the wake of the Chinese invasion in 1962. Anand started a few studies in the area of high-altitude physiology, and served as an advisor to the Defense Institute of Physiology and Allied Sciences. A few of his students were responsible for building up this institute.

Anand’s services to the nation were not confined to AIIMS alone. He made substantial contributions to several institutions, societies and journals related to medical sciences like the Sher-e-Kashmir Institute of Medical Sciences, National Academy of Medical Sciences, Medical Council of India, Family Planning Foundation, Vallabhbhai Patel Chest Institute, the Association of Physiologists and Pha-
H. P. Gandhi (1920–2008)

The father of Indian freshwater diatom science, Hemendrakumar Prithviraj Gandhi, breathed his last on 5 June 2008 at his residence in Junagadh, Gujarat, India. He has the unique distinction of pioneering diatomological research in India.

Gandhi was born in Pratapgarh, Rajasthan on 20 August 1920. He did his schooling at Pratapgarh and obtained intermediate degree from Agra. Later, he completed Bachelor’s and Master’s in botany from Wilson College in Mumbai, where he specialized in phycology under the supervision of the then leading phycologist A. Ella Gonzales. His work on algae of water bodies in the islands of Bombay and Salsette predates to November 1944. His work initially focused on algal taxonomy, periodicity, seasonal succession, population dynamics and its ecology. During this period, he was fascinated with diatoms for their form, structural beauty and their occurrence in profusion. Diatoms are a species-rich group of photosynthetic eukaryotes, with enormous ecological significance and great potential for environmental application. Gandhi’s fascination towards diatoms was evident from his Master’s thesis, which includes description of 10 new species, 21 new varieties and 40 new forms of algae. He published papers on diatoms of Bombay and Salsette in three parts during 1952–54.

Gandhi joined Elphinston College, Mumbai as a lecturer in 1949–50, and then joined Karnataka University (then Karnataka College), Dharwad, as an assistant lecturer in July 1949. His straightforwardness payed him a series of unceremonious transfers to M. N. College, Visnagar in Gujarat (August 1949), then to I. Y. College, Bombay (November 1949), followed by Rajaram College, Kolhapur after which he finally returned to Karnataka College (June 1951). With the bifurcation of Bombay Presidency, in 1956, Gandhi was again transferred to Gujarat. His keen interest in the subject made him collect algal samples from all possible locations during these transfers, tours and botanical excursions. He retired in 1980 as Principal of the J.J. Science College. On his retirement, the Gujarat University requested Gandhi to participate in the research project on the diatom-based palaeoecological investigations in sub-Himalayan ranges. Subsequently, he started work on freshwater fossil diatoms of Karez beds in Kashmir. With this work, Gandhi became one of the earliest Indian phycologists to undertake electron microscopic studies of diatom frustules and highlight its implications in taxonomy.

Gandhi made two major contributions to diatom science, and they divide his career into distinct phases. The first phase dealt with taxonomy and systematic of freshwater and brackish water diatoms. The second phase centered on freshwater diatoms and its application as bioindicator. In early 20th century, autecological indices were developed to infer levels of pollution based on the species composition of assemblages and the ecological preferences and tolerances of taxa. His paper on freshwater diatoms from Mugad is a fine and simple example to show how diatoms can be used as an indicator of pH of water bodies. With a simple percentage calculation he explained hypothesis like habitat preference and habitat quality of freshwater diatoms. Examination of diatoms from different parts of peninsular India made him construct the relation between the diatom distributions and geology of the place, which later got popularized as the concept of biogeography.

Gandhi was the first in India to report that unicellular organisms have their own biogeographic zones, and suggested and identified the Western Ghats as a potential place to report a number of endemic diatom taxa. He proved this point by describing more than 100 endemic diatom taxa from Western Ghats streams and rivers. Still then many scientists argued about the endemism in diatoms and put forth the ubiquity hypothesis. But the recent researches challenged the ubiquity