rmacologists of India, and the *Indian Journal of Physiology and Pharmacology*. Anand received several honours and awards. He was awarded the Padma Shri in 1969, for his contribution in the field of medicine. He was a fellow of the Indian Academy of Sciences, Indian National Science Academy, National Academy of Medical Sciences and National Academy of Sciences.

Anand accepted the post of Advisor on Health Manpower Development at the South East Asia Regional Office of the World Health Organization in 1974, after taking voluntary retirement from AIIMS. In 1977, he was conferred Emeritus Professorship by AIIMS. He returned to the Department of Physiology at AIIMS, and continued his association with it till around 2000. Serious health problems made it difficult for him to continue in the department after that. The imposed idleness and restricted mobility were too much for a man like Anand, who loved activity all his life. Fortunately, he remained mentally alert and agile till the last day. He will remain a role model not only for his students, but all the young Indian scientists who aspire to make significant contributions in science.

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H. P. Gandhi (1920–2008)

The father of Indian freshwater diatom science, Hemendrakumar Prithivraj 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.

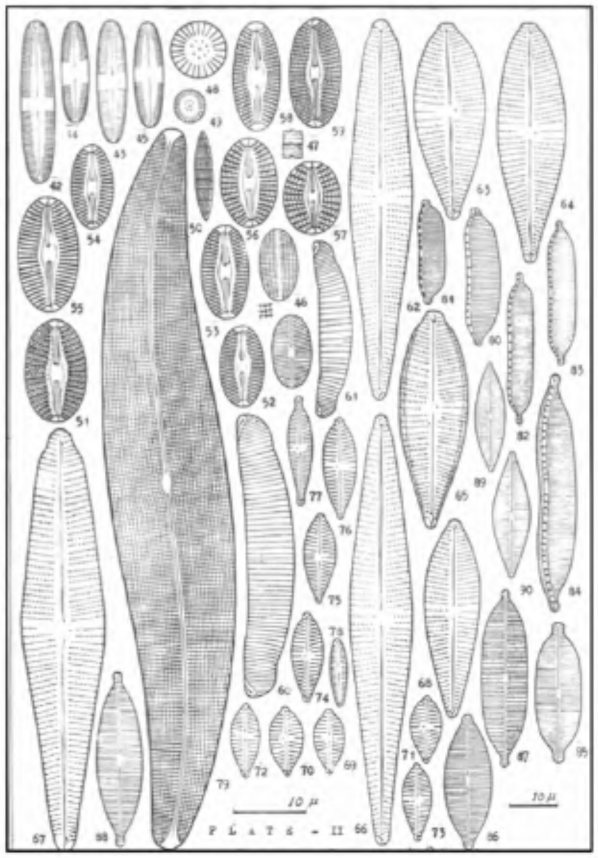
Gandhi was born in Pratapgarh, Rajasthan on 20 August 1920. He did his schooling at Pratapgarh and obtained intermediate degree from Agra. Later, he completed Bachelor's and Master's in botany from Wilson College in Mumbai, where he specialized in phycology under the supervision of the then leading phycologist 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 Elphinstone College, Mumbai as a lecturer in 1949–50, and then joined Karnatak University (then Karnatak 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 Karnatak 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 Karewa 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



Camera Lucida diagrams of diatoms by Gandhi.

hypothesis for diatoms and showed that diatom communities are controlled by the same processes affecting macro-organisms, although possibly not to the same degree. Hence it is necessary to continue research into diatom biology, ecology and the factors driving diatom species diversity and geographic distributions, and also to protect relatively isolated areas against further introductions of exotic species and degradation.

Gandhi has authored a book and more than 35 publications covering the wide fields of diatom taxonomy, diatom ecology, biostratigraphy to flowering plants. His work includes the description of freshwater diatom flora from parts of Maharashtra, Karnataka and Gujarat. His significant contribution includes the description of nearly 299 new diatom taxa. His publications serve as the main reference for all phycological research, particularly diatomology in the southern hemisphere. His correspondence with Hustedt, Round, Cholnoky, Lund and Patrick led to exchange of letters and reprints with almost all important diatomists of the time. Despite lack of facilities and other administrative hurdles, Gandhi did a pioneering work on freshwater diatoms.

Gandhi was a multifaceted person; he exhibited a great interest in a wide array of subjects which included repairing radios, photography, tailoring, horology, carpentry, book binding, etc. He was also a qualified radio mechanic from the City and Guilds of London Institute, England. During his time, research papers on diatoms were written in German, while the taxonomy was given in Latin. Despite the fact that he was unfamiliar with both languages, he took the necessary effort to teach himself these languages, with no assistance from anyone else, till he was fluent in them.

I had the opportunity to be associated with him from 2006 and to work with his huge diatom collection. He maintained meticulous records of samples, slides and literature. His Camera Lucida diagrams are drawn with lot of precision, which deliver more information than a present day micrograph. The maintenance and systematic labelling of his samples have enabled me to locate them even after five decades. Gandhi was a religious and humane person, who followed strong scientific traditions and ethics in professional life. I feel that a great teacher and scholar like him will be missed. The encouragement and enthusiasm he initiated and inculcated in us will remain forever.

Gandhi carried out pioneering work on diatom systematics, taxonomy and ecology and brought forth the potential it offers, from water quality, to environmental monitoring and biostratigraphy. He will be remembered for his selfless contribution in the field of diatomology. His perseverance and dedication to research is an inspiration for young researchers to emulate study of the nature sculptures and understand the biology of these organisms. The recent works on diatoms under different domains such as water quality, climate changes, nanotechnology, etc., show that the diatomology is a multi-disciplinary field of research with greater opportunity, intellectual challenge, and social relevance. It is equally clear that many great works remain to be done in Indian diatomology. The flourishing research and interests in diatomology in India bears a testimony to the legacy of Gandhi, and undoubtedly he is the 'Father of Freshwater Diatomology in India'. Although he did not care for awards and honours, deriving pleasure solely from his scientific pursuits, he never failed to inspire others to achieve higher levels of excellence and integrity, be it in science or in other spheres of life.

He leaves behind his wife, Zamku Bai, children and grand children.

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