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## Dr D.C. Bharadwaj (1923 - 1995)

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THE science of Palaeopalynology suffered a great loss in the death of Dr D.C. Bharadwaj, who left this world on February 9, 1995, following a brief illness, at Lucknow. He was born on December 13, 1923 at Biswan — a small town in Sitapur District of Uttar Pradesh. His academic career reflects his talent and high calibre aptitude for scientific work. An agriculture graduate, a bryologist by training during his postgraduate research tenure and a palynologist by profession, Dr Dinesh Chandra Bharadwaj achieved international recognition and high appreciation for his innovative contributions in bryophytes as well as palynology. He was awarded Ph.D. Degree in Botany (Bryophyta) in 1952 for which he worked with a top ranking scientist, late Professor S.K. Pandey, at the Department of Botany, Lucknow University. While working as a Research Assistant (1947-49) the high potentials of young Bharadwaj were recognised by Professor Birbal Sahni who identified him for an assignment at the newly sprouting Institute of Palaeobotany. The sad demise of Professor Sahni in 1949, just after a week of the Foundation Stone-laying Ceremony of the Institute's new building, put challenging responsibilities on the shoulders of Mrs

Savitri Sahni and a few newly appointed young scientists in the Institute; Dr Bharadwaj was one of them. Mrs Sahni accepted the challenge and the small group of devoted scientists worked religiously and planned meticulously for the future of the Institute.

The award of the German Academic Exchange Service (DAAD) Fellowship in 1953, to work with Professor Robert Potonié of the Geological Survey, Krefeld, Germany opened new vistas of science of spores and pollen for Dr Bharadwaj. Professor Potonié was a leading world figure in fossil palynology, which subject was in the formative stage during early fifties, and Bharadwaj was full of enthusiasm with a highly sensitive and receptive mind. Potonié loved Bharadwaj like his son and regarded him as his heir in palynology. Dr Bharadwaj was admitted to the Degree of Dr rer. nat. in 1955 by the Bonn University. On his return to India a breakthrough was made for the Indian coal palynology; he established the school of Gondwana Palynology which later on widened to encompass palynology of Tertiary lignites and biopetrology of Gondwana Sequence.

Beside his progress and promotions through cadre, from Junior Scientific Officer (1949) to Deputy Director (1977-81) at the Birbal Sahni Institute, his scientific profile attained heights with a much faster rate. Dr Bharadwaj was pioneer to discover and systematically describe the Saar palynoflora from Europe and Raniganj assemblage from India. His style of describing the fossil spores and pollen — explaining their organization and reconstruction, and interpretation of observation by L-O analysis were original and perfect and hence were highly applauded by palynologists. During his active scientific career of about 35 years, Dr Bharadwaj guided 18 Ph.D. students, analysed geological sequences from Carboniferous to Tertiary from India, Europe, China, South America, North America, and Spitsbergen. The concept of species delimitation, correlation of coal-seams, palynology-based Gondwana-fit, classification, morphotaxonomy and evolutionary trend were

some of his favourite topics on which he has written thought provoking papers. His ardent love for bryophytes never diminished. He could add more hours to his working days to take up the study of his vast collection of bryophytes. In the late evenings or on holidays one could see him teasing and dissecting the fragile specimens under water in a petridish and drawing the characters with the aid of Camera Lucida. He established a new genus *Foleoceros* under Anthocerotales in the year 1971, a time period when he was also busy in establishing the standard palynological sequences in the coal-bearing strata of Damodar, Satpura and Son-Mahanadi Valley basins.

Dr Bharadwaj was a good planner in science, an outstanding organiser, a seasoned editor and esteemed teacher. His association, as a member of Editorial Board, Editor, or Chief Editor, with the *Palaeobotanist*, *Geophytology*, *Review of Palaeobotany and Palynology*, *CIMP Monographs*, *Biological Memoirs*, *Proceedings of IV International Palynological Conference*, *Palaeobotany and Cryptogamic Botany* and several other periodicals and special publications is the testimony of his acumen for editing.

The International Community of Palynologists honoured him at several occasions by nominating him the Sessional President of International Congress on Carboniferous Stratigraphy and Geology, Paris (1963), International Palynological Conference at Utrecht (1966) and Novosibirsk (1971), General President at IV International Palynological Conference, Lucknow (1976) and CIMP International Symposium (1973). He was also invited to contribute papers at International Botanical Congress, Paris (1945); and American Association of stratigraphy and palynology, California (1973).

Dr Bharadwaj was a member or office-bearer of several academic bodies, both National and International — Member, International Subcommission on Carboniferous Stratigraphy (IUGS); Secretary, International Commission on Palaeozoic Microfossils; Member, International Society of Palynologists; Vice-President, International Commission of Palynologists; Member, Scientific Society of IGCP (UNESCO, IUGS); Secretary, The Palaeobotanical Society, and numerous others. In organizing the IV International Palynological Conference at Lucknow during 1976, he played a pivotal role.

The brilliant young Bharadwaj was conferred with awards and honours even during his student life; he was the recipient of Irwin Gold Medal, 1943 for his excellent work in Experimental Agriculture; Hercourt Butler Medal, 1943 for being judged as the Best Student; Sukhbir Sinha Medal, 1943 for the Best Student in Agriculture (all at Agra University); Ruchi Ram Sahni Research Award, 1950 for performing excellent research in Botany at Lucknow University.

Beside his scientific achievements and great contributions, his thinking, writing and knowledge on an array of subjects, may it be astrology, numerology, religion, culture, economics, politics, scientific planning or humanity, will ever be remembered by those who had opportunity to discuss with him or to listen to him. The issue of identity card to each citizen of India, to write the identification numbers on the arm of each person of the country by tattooing, to build very small hydro-power dams on each water-source to produce electricity for Tahsil level, to make huge cow-dung-gas plants in each area of 50 sq km in which organic material be collected by big pipeline system, to write Hindi in roman script, to introduce computers in a big way, to lease out land to villagers for planting trees — were some of his ideas for solving many existing problems of the society. This he used to propose 25 years back! Some of us would say that he thinks much ahead of time, and he would accept it and say "that is why they don't understand me".

During the most stressful times of his life, he adapted a deep silence without sharing his problems with others. Originality in thinking, being much ahead of time and having burning desire to break-away from the ineffective patterns probably turned him into a person who would do the things his own way.

Those who knew Dr Bharadwaj — personally or through his writing, and those who were closely associated with him shall be at a loss by his demise. His sense of humour, "forgive and forget" attitude, crisp and clear decisions, adaptability to any situation, indepth analysis of a problem, insight into scientific matters and pleasant, personal, and affectionate relationship with colleagues and students will ever be remembered.

R.S. TIWARI

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