

Panchanan Maheshwari FRS — A Karmayogi (1904-1966)

Born on 09 November 1904, schooled in his hometown Jaipur, Rajasthan, and graduated from the University of Allahabad in Uttar Pradesh (BSc 1925, MSc 1927), Maheshwari qualified for the DSc of the University of Allahabad in 1931 under the inspiring guidance of the American missionary teacher Dr Winfield Dudgeon. Maheshwari's career has been a classical example of '*guru shishya parampara*'.

Maheshwari's doctoral research was on the embryology of the leguminous tree *Albizia lebbek*; the work involved the daring job of climbing up the trees to collect floral materials at different developmental stages. Microtoming of the paraffin-embedded material during the summer heat of Allahabad was not possible for want of room cooling facilities; the undaunted Maheshwari carried a microtome (a precision instrument used for preparing micron-thin sections) and the plant material to the cool place Almora where he continued his research activity.

Maheshwari began his teaching career in 1928 at Ewing Christian College, Allahabad, and subsequently served the universities of Agra (1930-'36), Allahabad (1937-'39), Lucknow (1939), and Dacca (1939-'49). In 1949 Sir Maurice Gwyer, the then Vice-Chancellor of the University of Delhi, invited Maheshwari to head the Department of Botany at the University, which he did until his demise in 1966. His assignments in his early years of teaching were varied. He never waited for the institution to provide him materials for practical classes; he readied on his own all the necessary permanent microscopic preparations. His skills in microtechnique were par excellence. His chalkboard work was exemplary; after he

finished the class some of his colleagues sneaked into the classroom to study the Professor's chalkboard work. His handwriting was a treat to the eyes. Many contemporaries have described Maheshwari as a teacher of teachers.

Following his *guru's* message: "Do for your students what I have done for you" and through his utter dedication Maheshwari inspired several students; he was a teacher of capital calibre and erudition. The Professor acted as a magnet for many students, and when they became attached to him, he radiated a feeling of paternal warmth; he had a penetrative effect on every aspect of their welfare (including food, clothing and health) and progress. He had an obsession for imparting knowledge and training, and especially so when he found the student absorptive. For the Professor no job – whether pinning together of more than one sheet of paper, or gumming the flap of an envelope, or preparing a parcel of reprints or microslides – was trivial. I recall an occasion when the Professor had entrusted a research scholar the job of entertaining a visiting Russian delegation and found the research scholar rather casual about the task; the Professor summoned him to his office deliberately six times at very short intervals, only to make him realize that he should attend to even such jobs as having straws and bottle opener ready to treat the delegation with cold drinks. The Professor got the best out of the students through healthy competition; he often assigned the *same* task, such as proof reading, or drafting a letter or telegram, confidentially to more than one student and imparted greater training to the weaker. Even after the students' completion of training and placements elsewhere, the Professor kept contact with them and encouraged



them through spontaneous acts of practical help rather than mere oral best wishes. Many students of the Professor and notably the late Prof. V Puri and the late Prof. B M Johri became stalwarts in plant morphology.

Maheshwari was an incisive speaker and writer. To train students in the arts of speaking, scientific writing, and organizing seminars, he founded the Delhi University Botanical Society, started a mimeographed journal of the Society christened '*The Botanica*', and a weekly colloquium – all three organized entirely by the students of the Department initially under his patronage. He wanted his students to give equally effective seminars on botanical and non-science topics. He himself gave seminars on topics such as 'Ramayana'. Besides being the founder editor, he regularly contributed articles to *The Botanica* on such a wide spectrum of topics as 'Origin of Life', 'Nature and Nurture', and 'Plants, History and Politics'. The Professor sometimes adopted reverse psychology and wrote in *The Botanica* under the pseudonyms 'Idler' and 'Busy Idler' and used catchy titles such as 'How to make your seminars least understood', 'How to write a research paper that can meet with the outright rejection by the journal', and 'Ten Commandments for Bad Writing'. 'The Best Student of the Year' and 'The Best Article in *Botanica*' awards served as great incentives to students. Maheshwari firmly believed that botany is a subject that should be learnt as much in the field as inside the classrooms and laboratories; he encouraged regular field excursions, and plant collection and plant introduction activities. Prizes for the 'The Best Herbarium Specimens' and for collection of any lichen from the arid environs of Delhi served as great fillips to students to learn field botany. For sustaining similar interests among his colleagues, he held botanizing outings

at 6 a.m. during Delhi winter; likewise the facilities for microtomy were kept open at 6 a.m. during the hot summer days of Delhi! Maheshwari encouraged the research students to learn, besides English, at least one other European/Eurasian language (German, French, or Russian) which was rich in botanical literature. Imagine a Head of the Department conducting, amidst his tight schedule of teaching and administration, German translation classes for his chosen colleagues (I have been one such fortunate student and colleague)!

Maheshwari's chief interest was plant morphology, and particularly the embryology of seed plants on which he carried out intensive research; his book *An Introduction to the Embryology of Angiosperms* (McGraw-Hill 1950) is a standard reference text the world over even today. However, he did not favour extreme narrow specialization; besides embryology he was vitally active in several branches of plant science, and made significant contributions to economic botany and plant anatomy. Names of up to 10 taxa ranging from microbes to angiosperms aptly commemorate his keen interest in several fields of botanical research: *Panchanania jaipuriensis*, a hypomycetous fungus; *Isoetes panchananii*, a new species of quillworts; *Maheshwariella bicornuta*, a Palaeozoic seed from the lower Gondwanas of Karaharbari coal field, India; and *Oldenlandia maheshwarii*, a new rubiaceaceous taxon are some examples. The broad spectrum of botany which Maheshwari portrayed made him welcome in laboratories of many lands; he was a much sought after examiner in many branches of botany all over India. In fact his sharp and yet kind PhD viva-voce examinations left a lasting impression on the examinees. He researched/lectured at the University of Kiel (Germany), Harvard Univer-

sity (USA), University of Illinois at Urbana (USA), University of Nijmegen (The Netherlands), and in the International Botanical Congresses at Stockholm (1950), Paris (1954), Montreal (1959), and Edinburgh (1964), and in the science academies of the USSR, Poland, and Australia.

In 1956 Maheshwari entered the domain of experimentation in embryology, and soon discovered the vast application of plant tissue and organ culture techniques in studies of embryology. At his hands, embryology grew rapidly into an experimental science and received global recognition. His works on embryology in relation to taxonomy, life history of *Gnetum*, and test-tube fertilization in flowering plants are noteworthy. Maheshwari outlined the applications of test-tube fertilization in overcoming the barriers to sexual incompatibility in angiosperms. He continually encouraged his students to make contributions that would leave an indelible impact on contemporary knowledge. Experimental investigations of his pupils on the endosperm of angiosperms and on androgenesis are only illustrative of the many examples. Classical embryologists considered the angiosperm endosperm a maimed tissue and to lack morphogenesis. Work done in Maheshwari's laboratory has provided overwhelming evidence for the active morphogenic expression of the endosperm. Again, Maheshwari's school has been the pioneer in demonstrating the potential of pollen grains to form haploid embryos.

In view of the rapidly increasing research output in botany in India, Maheshwari lost no time in realizing, as early as 1950, the need of a journal truly international in character to disseminate knowledge. His unflinching efforts bore fruit; the journal *Phytomorphology*, the official organ of

the International Society of Plant Morphologists, recently issued its Golden Jubilee volume. Of this Society, Maheshwari was the Founder-President and of the *Phytomorphology*, the Founder-Editor.

Realizing the importance of periodic assessment by peers, Maheshwari organized many all-India and international symposia, and summer schools. The international symposium on 'Plant Tissue and Organ Culture' (December 1961) was the first of its kind. So great was his tenacity of purpose that he edited and published the proceedings of all the meets within a short period after their conclusion. Maheshwari published his original research findings, lectures, books, reviews and general articles since 1929, and there has been no blank year in his publication activity. Whenever his work appeared in print, he beamed with genuine child-like happiness.

Maheshwari was an able administrator; his method of working reflected his extraordinary strong will. He was a man of precision and condemned the substandard forthright. He had a rough exterior and an outstanding intolerance for inefficiency. Nonetheless, those who knew him well soon discovered that his annoyances were evanescent, and always made an uplifting impression on them. Although it was difficult to win his appreciation, yet no good job remained unrecognized by him. He firmly believed in being practically helpful and not in oral kindness. His punctuality in disposing the day's mail was astonishing; replies were mailed the same day! Requests from outstation visitors to the Department – be it for a reprint of a publication, or herbarium specimen, or permanent microscopic preparation – were promptly complied with; by the time the visitors returned to their place of work they found

to their most pleasant surprise Maheshwari's mail waiting for them! His close associates recall many anecdotes of his prodigious memory, punctuality, and helpful nature; one has to merely read through the several tributes (*Botanica* 17, No.2, 1966) and memorabilia (*Botanica* 21, No.2, 1970) which appeared after his death.

Maheshwari was never complacently satisfied with his vast collection of botanical materials, be it exotic specimens, microscopic slides, transparencies, or literature including rare books. He generously and very appreciatively shared their use with his students, colleagues and associates. After his demise, Mrs. Shanthi Maheshwari donated the whole of Maheshwari's invaluable academic treasure to the University Department of Botany that houses the Professor Panchanan Maheshwari Memorial Library.

Many laurels came to Maheshwari, both at home and from overseas. He was elected Fellow of several distinguished academies and institutes (among them the American Academy of Arts and Sciences), President or Vice-President or Secretary of several botanical organizations, and associate or honorary or corresponding Member of many learned societies (including the Botanical Society of America). The Birbal Sahni Medal by the Indian Botanical Society and the Sunder Lal Hora Memorial Medal by the National Institute of Sciences of India are just two of the many coveted honors he received. With laurels came heavy responsibilities that took Maheshwari the world over on many occasions and in many capacities – as UNESCO-sponsored Scientist, Member of Scientific Delegations and Visiting Professor. He took his responsibilities very religiously and not as perfunctory duties. For him work was worship; he lived like a *karmayogi*. He

staunchly advanced the cause of botany. Conspicuous because of his perennial service to botany and sustained contributions to plant embryology, Maheshwari was elected Fellow of the Royal Society of London in March 1965. It was characteristic of Maheshwari that his receiving these honors was often not known even to his colleagues for quite sometime.

On 08 May 1966, Maheshwari was scheduled to leave for a six week visit to Japan and USA. But fate intervened. Instead of wishing him a warm send off, the staff and students of the Department of Botany spent a period of anxiety; he suddenly became infirm and was hospitalized for over a week. On the afternoon of 18 May, death which does not respect hopes or desires, snatched him away. Through the numerous letters of condolence people at home learnt with a sense of pride that every one whom the Professor wrote to, or met with, or spoke to felt elated, and even those whom he never knew derived inspiration from others whom he had stimulated.

In Panchanan Maheshwari's passing away the world of science lost a savant, the global family of botanists a crusader of botany, his pupils a stimulating guru, his admirers a sagacious friend, his wife an understanding husband, and his children an affectionately dutiful father. The Heavens have become richer with such a noble acquisition.

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