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# Edavaleth Kakkat Janaki Ammal

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(by C V Subramanian)

Janaki Ammal was born in the year 1897, in Tellichery, Kerala, in a cultured middle class family. Her father was a sub-judge in what was then the Madras Presidency. She had six brothers and five sisters. After schooling in Tellichery, she moved to Madras where she obtained the bachelor's degree from Queen Mary's College, and an honours degree in Botany from Presidency College in 1921.

She then taught at Women's Christian College (WCC), Madras, with a sojourn as a Barbour Scholar at the University of Michigan in the USA where she obtained her master's degree in 1925. Returning to India, she continued to teach at the WCC, but went to Michigan again as the first Oriental Barbour Fellow and obtained her D.Sc. in 1931. She returned as Professor of Botany at the Maharaja's College of Science, Trivandrum, and taught there from 1932 to 1934. From 1934 to 1939 she worked as geneticist at the Sugarcane Breeding Institute, Coimbatore. From 1940 to 1945 she worked as Assistant Cytologist at the John Innes Horticultural Institution in London, and as cytologist at the Royal Horticultural Society at Wisley from 1945 to 1951.

On the invitation of Jawaharlal Nehru, she returned to

India in 1951 to reorganize the Botanical Survey of India (BSI). From then onwards, Ammal was in the service of the government of India in various capacities including heading the Central Botanical Laboratory at Allahabad, and was officer on special duty at the Regional Research Laboratory in Jammu. She worked for a brief spell at the Bhabha Atomic Research Centre at Trombay before settling down in Madras in November 1970 as an Emeritus Scientist at the Centre for Advanced Study in Botany, University of Madras. She lived and worked in the Centre's Field Laboratory at Maduravoyal near Madras until her demise in February 1984.

Ammal was elected Fellow of the Indian Academy of Sciences in 1935, and of the Indian National Science Academy in 1957. The University of Michigan conferred an honorary LL.D. on her in 1956. The Government of India conferred the Padma Shri on her in 1957. In 2000, the Ministry of Environment and Forestry of the Government of India instituted the National Award of Taxonomy in her name in 2000.

In the matrilineal families in Kerala, women normally enjoyed more freedoms and privileges than in many other parts of India. In enlightened families such as Ammal's, girls were encouraged to engage in intellectual pursuits and in the fine arts. Ammal must have been born with a passion for plants which led her to choose to study Botany and go to Madras to do so. Under the influence of teachers at the Presidency College, Ammal's passion sharpened her love of nature and the study of plants in their natural environment.

Her life reflects her experiments in settling for a career and, more importantly, for a mission. First, she took to teaching. Not content, she took to research. Her two innings in Michigan were crucial in determining the choice of her specialization in plant science: she chose cytology which in those formative years of the science was concerned primarily with the nucleus and the chromosomes. The early decades of the last century saw a great deal of pioneering work in genetics, notably on wheat and on sugarcane. At the Sugarcane Breeding Institute at Coimbatore, in the early decades of the last century, C. A. Barber and T. S. Venkataraman initiated research in sugarcane breeding. Venkataraman developed the internationally famous Coimbatore canes such as Co 419 with

qualities of drought-resistance, disease-resistance, etc. The Co varieties were grown in all parts of India and were also preferred for cultivation in other countries where sugarcane was an important crop.

It was in this scenario that Ammal quit her teaching position in Trivandrum and joined the Institute at Coimbatore. Ammal made several intergeneric hybrids: *Saccharum* x *Zea*, *Saccharum* x *Erianthus*, *Saccharum* x *Imperata* and *Saccharum* x *Sorghum*. Ammal's pioneering work at the Institute on the cytogenetics of *Saccharum officinarum* (sugarcane) and interspecific and intergeneric hybrids involving sugarcane and related grass species and genera such as *Bambusa* (bamboo) is epochal. But that was just the beginning of a life in science well lived. During the years (1939–1950) she spent in England, she did chromosome studies of a wide range of garden plants. Her studies on chromosome numbers and ploidy in many cases threw light on the evolution of species and varieties. *The Chromosome Atlas of Cultivated Plants* which she wrote jointly with C. D. Darlington in 1945 was a compilation that incorporated much of her own work on many species.

The focus on polyploidy and evolution of plants which effervesced then continued on her return to India and Ammal now worked on some of the most important genera: *Solanum*, *Datura*, *Mentha*, *Cymbopogon* and *Dioscorea*, besides a range of medicinal and other plants too numerous to be listed here. Ammal was an original thinker and she attributed the higher rate of plant speciation in the cold and humid northeast Himalayas as compared to the cold and dry northwest Himalayas to polyploidy. Also, according to her, the confluence of Chinese and Malayan elements in the flora of northeast India led to natural hybridization between these and the native flora in this region, contributing further to plant diversification.

Following her retirement, Ammal continued to work unabated, focussing special attention on medicinal plants and ethnobotany. She continued to publish the original findings of her research. In the Centre of Advanced Study Field Laboratory where she lived and worked she developed a garden of medicinal plants with great zeal and dedication. Though cytology was her forte throughout her career, her work embraced genetics,

evolution, phytogeography and ethnobotany.

Viewing her life and her work, I would say this of Ammal: From a young age, she was endowed with the courage to make choices and the versatility to change course and adapt where and when required. With her passion for plants, she defined for herself her goals and purpose, and her mission in life. Having done that, she kept her mission above everything else and stuck to it till the end. Crop plants, garden plants, plantation crops, medicinal plants, plants in the wild and plants of the tribals, all species were interesting to her. She just worked on what was on hand and within reach. And, there was much that was on hand and within reach. Her familiarity with British plants was matched by her familiarity with tropical species.

She led a simple life of total dedication to her mission, remaining single. Her physical needs were few and she was unostentatious and modest to the core. To have spent the cruel War years in an alien country in the study of garden plants needed courage of a special kind. When war clouds were on the western horizon to be battered by what Winston Churchill called the “gathering storm,” why did Ammal leave her country to take up a position in Britain? Did she have any support? My conjecture is that India’s freedom fighter in Britain, Krishna Menon, only a year older than her, and her contemporary in Tellichery and at the Presidency College, Madras, could have been instrumental. Menon may have been the link to her acquaintance with India’s first prime minister, but I have no evidence for this.

She was thoroughly Indian in attire and habits, selfless and Gandhian in her lifestyle. She did not seek favours or the limelight and yet honours came to her unsought; this is true of many great women and men. The honorary LL.D. which the University of Michigan conferred on Ammal in 1956 in recognition of her contributions to botany and cytogenetics said: *Blest with the ability to make painstaking and accurate observations, she and her patient endeavours stand as a model for serious and dedicated scientific workers.*

She lived up to her own definition of greatness which combined virtue in life and passion in the pursuit of her science. There is thus much for us to emulate in her life and work.