

## E. K. Janaki Ammal and the rose, dedicated to her

Girija Viraraghavan, 3. November 2018

NOVEMBER 4th is her birth date

Many of you may not have heard of the scientist E.K. Janaki Ammal. But if you are a plant breeder, interested in the genetics of plants, their chromosome numbers and their ploidy (diploid, meaning 2 sets of chromosomes, triploid, meaning 3 sets and tetraploids, meaning 4 sets) in order to make meaningful crosses, you would certainly know her name because for many decades she worked relentlessly in laboratories, poring over all plant species to work out their internal details. Her monumental work can be seen in the book she collaborated with Dr C D Darlington titled *Chromosome Atlas of All Cultivated Plants*. The first edition was printed in 1945. This is referred to as a Bible among plant scientists.

E K Janaki Ammal was a brilliant cytogeneticist who battled great odds (she was a woman, an Indian of mixed heritage—of the so called 'low' caste of Ezhavas of Kerala, but also with a grandfather who was an Englishman and a judge in British India - in the early 20th century) to achieve outstanding success in her field. Born in 1897, in Thalassery, Kerala, her judge father ensured she pursued her education..and boy, did she do him proud.. a Bachelor's and then a Master's degree in Botany from Presidency College Madras in 1921 was followed by a Barbour scholarship for another Master's degree at the University of Michigan USA in 1925. In 1931 Michigan University conferred an honorary doctorate (DSc. honoris causa) on her – she is still one of the very few Asian women to be so awarded.

Choosing a life of scholarship over marriage (unheard of in those times) she taught in Chennai and Trivandrum for some years before being chosen by Nobel laureate Sir C . V. Raman as a Research Fellow doing work on sugarcane in the newly established Indian Academy of Sciences. Her work on sugarcane, in Coimbatore, in the 1920s is well known. She worked with sugarcane species from other countries and our indigenous varieties to create hybrids that made our sugar sweeter, and that would do well in all parts of India.

But gender and caste discrimination disgusted her and she left for England to join the famous John Innes Institute, Norwich, Norfolk, as a cytologist. Working there from 1940 to 1945 she braved wartime bombings on a daily basis, diving under her bed when the raids occurred and sweeping the broken glass in the office when she reported for work! Impressed by her dedication the Royal Horticultural Society invited her to join them in their gardens at Wisley near Kew. Here she met many world famous plant scientists, among them the biologist Dr C.D. Darlington, who became her friend and mentor and with whom she authored *The Chromosome Atlas*. At Wisley she worked on the plant magnolia, and also planted many in the gardens, many still flowering today, including one named for her—*Magnolia kobus* 'Janaki Ammal'.

Serendipitously, on a flight home to India, in 1948, she met the then Prime Minister, Pandit Jawaharlal Nehru, who was so impressed by her and her talents, that he invited her to return and head the newly formed Botanical Survey of India (BSI). She agreed and reorganised the office in Calcutta in the 1950s. Her interest in biodiversity and ecology took her to remote parts of the country, collecting indigenous plants, many of medicinal value, folklore and tribal knowledge systems, incorporating them into the work of the BSI.

As an environmentalist she actively protested against projects like dams and hydroelectric projects, like in the Silent Valley in Kerala, which would be harmful. She worked at the Atomic Energy Station in Trombay and lectured at international symposiums. After retirement she became Emeritus Scientist in the Centre for Advanced Botany in the Madras University at Maduravoyal, just outside Chennai.

She was awarded the Padma Shri in 1977.

Janaki Ammal led an ascetic life, her focus entirely on her work. She died in 1984 at age 87.

In recognition of her outstanding work, the Government of India has instituted scholarships in her name.

In the U.K. too, The John Innes Institute has started the E K Janaki Ammal Scholarships for students from developing countries.

It is very sad indeed that this pioneering woman scientist is not much more well known than she is at present.

Coming back to her seminal work, the 'Chromosome Atlas of Cultivated Plants', we bought a copy as early as May 1966 when Viru was starting his rose breeding. Since he wanted to focus on rose species native to India, and he wondered how difficult it would be to breed with them, he pored over this book, checking out the ploidy of different rose species. Since he has been interested in breeding with other plants, like rhododendrons, magnolias and the Himalayan blue poppy (meconopsis), he refers often to this book, which we have had to rebind as the pages were coming apart!!

We had always wondered about the person Janaki Ammal and her astonishing and remarkable history. We wished we had known her before she died in 1984, perhaps alone and lonely surrounded just by her cats. While she had no immediate family as she was unmarried, she did have many nieces and nephews and their families. But sadly little of her papers and personal effects have been retained. Fortunately, many of her academic papers are available at the Bodleian Library in Oxford.

Since we felt very strongly that enough recognition had not been given to this pioneering woman scientist of our country, who practically died in oblivion, despite her mammoth botanical research, we felt that we would like to honour her by naming a rose in her name, just as we have in the past been privileged to name roses for Sir George Watt, Sir Henry Collett and Frank Kingdon Ward (all of whom discovered *Rosa gigantea* in the wild), Dr N.C.Sen and Narendra Singh for their help in reaching us plants *R. clinophylla* species, Leschenault de la Tour (who discovered *R.leschenaultiana* – belonging to the musk rose complex - in the Western Ghats) and also for many dear friends across the world.

Finding a relation of Janaki Ammal's, whom we could approach to request permission, proved surprisingly and pleasantly easy. Our good friend Dr. Henry Noltie of the Royal Botanic Gardens in Edinburgh, Scotland, who is a confirmed Indophile, with specialization on British Indian botanists, having written biographies of Robert Wight (the East India Company surgeon who was more of a botanist in the 1800's), and Hugh Cleghorn (India's first Inspector General of Forests) told us about Dr Vinita Damodaran, Janaki Ammal's great niece, who is Head of the Department of South Asian History in the University of Sussex, U.K.

Henry knew her well, and had come with her in 2016 to Kolkata, India, to the Botanical Survey of India – he to help set up the Kew exhibition on the botanical explorations in India by Joseph Dalton Hooker and she to set up in the new gallery on Botanical History, the sketches, research activities, letters, photographs etc, of Janaki Ammal ‘a pioneer woman botanist of the country who laid a base line of botanical research of BSI’. This exhibition still continues, and when we attended the January 2017 Kolkata National Rose Convention, we took time off to visit the lovely old high ceilinged BSI Headquarters on Sudder Street and spend time with Janaki Ammal. A wonderful added bonus for us was that this museum is named the George Watt Museum and houses all of the products he had assiduously collected while writing his masterpiece 10 volume Economic Products of India in the early 1900s. The museum is beautifully and carefully preserved and displayed and very well worth a visit. An entire floor of the building displayed the exhibition on Janaki Ammal, with many photographs, facsimiles of her correspondence and her work papers. Indeed what an absolutely remarkable woman! And what a beautiful woman!!

Well, Henry Noltie connected us up with Dr Vinita, and we wrote to her, that we had a *Rosa clinophylla* seedling, which we had tested for many years and which flowered well and continuously, and could we have her permission to name this rose for her great aunt? Pat came her reply: she was delighted that Janaki Ammal was being recognised in this manner. We had written that the rose was a medium dark rich yellow and as we had read that in later years Janaki only wore saris of this colour we thought it would be befitting to have this particular rose, in her colour, a hybrid with a resonatingly Indian signature species, and by an Indian hybridiser to be called ‘E.K Janaki Ammal’ .

For those interested the parentage of this rose is:

Landora x [Montezuma x {Little Darling x ( *R.clinophylla* x *R.bracteata*)}]

It has been classified as a Grandiflora, yellow blend color, fragrant, a tall growing shrub, disease resistant and continuous flowering.

We had the pleasure of meeting Dr Vinita Damodaran in August 2018 in Pondicherry... she visits every year as she has an ancestral house in the French quarter, and getting to know her.

We have sent material of this rose for more plants to be propagated so that they can be planted in the gardens of the institutions she worked in—the John Innes Institute and the Royal Horticultural Society’s gardens in Wisley, and in the Botanical Survey of India’s gardens.