

# Is Genius Hereditary?

Everybody knows that India's latest recipient of the Nobel Prize, Chandrashekar, is a nephew of C.V. Raman. The story doesn't end there. On investigation, *Society* learned that the family is a veritable genius factory with an amazing number of accomplished scientists in every generation, which include a dozen doctorates among the present generation. Ratna Rao Shekar, traces the path of that rare gene through generations.

It was probably only coincidence that the year Sir C.V. Raman was awarded the Nobel Prize in physics, young Chandrashekar was setting sail for the distant shores of England, and working on theories relating to 'Maximum mass of slight white dwarfs', that was to fetch him a belated Nobel Prize, 53 years later.

But what is stranger is that the same Tamilian Iyer family should breed two, out of five, of India's Nobel Prize winners. And what is more, produce several others who have risen to prominence in the fields of science, with significant achievements to their credit.

Of course families of geniuses where one or more members of the same family have received the Nobel Prize are not unknown.

Sir William Bragg shared the Nobel Prize for physics in 1915, with his son Sir Lawrence Bragg, for the work they jointly did in demonstrating the use of X-rays for revealing the structure of crystals. Then there was the French Curie family, which for two generations played a prominent role in the development of modern physics. Marie Curie and her husband Pierre Curie, their daughter Irene and son-in-law Joliet were all recipients of the Nobel Prize individually. The other most illustrious family is the Huxley family in England. For two succeeding generations they distinguished themselves in the fields of biology, anthropology, physics, literature, commerce, art, diplomacy and international administration. Beginning with T.H. Huxley, there were his grandsons, Julian Huxley, the world famous biologist and rationalist, Aldous Huxley the writer and mystic Andrew Fielding Huxley, the first Nobel Prize winner in the family, who was awarded the prize for physiology or medicine in 1963.

In India itself, we have the Tagore family, which produced several artists and thinkers. But if there is one family in India, that stands out for its intellectual

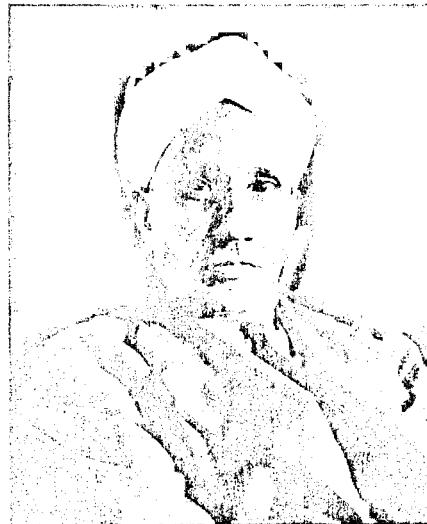
Aye, Aye,  
Sir  
(C.V. Raman!)

traditions and scientific temperament, then surely it is the C.V. Raman-Chandrashekar family.

There is one family in India, that has devoted itself to the cause of science and that too with some distinction. If Raman and Chandrashekar are the two outstanding men of this family, equally brilliant are others like, Dr. C. Ramaswamy, the former Director General of Observatories, Dr. Chandrashekar, the renowned demographer, Dr. S. Chandrashekar, recently elected to the Royal Society in London, Dr. S. Ramaseshan, the director of the In-

though you can hardly call the family a 'typical' South Indian family. It was, however, typical in the sense, like many Tamilian families there was emphasis on doing well in school and college, specially in maths. While Raman broke the record for the highest marks secured in physics in B.A. in Madras, Chandrashekar did one better. He broke even Raman's record by gaining higher marks in physics. If Raman finished school at the age of 11, Chandrashekar, even while he was an undergraduate, undertook original research in astrophysics and had his papers published in such prestigious journals as *The Physical Review*, of America, *The Proceedings of the Royal Society*, of London and the *Philosophical Magazine*. While Raman topped every exam he took, Chandrashekar more often than not secured 100 per cent in maths, as he would solve all the problems in the question paper, and what is more, get all of them correct!

Like uncle like nephew. C.V. Raman and Chandrashekar



dian Institute of Science, Bangalore, Pancharatnam, who died prematurely at Oxford, but was nevertheless a scientific genius, Dr. Radhakrishnan, the director of Raman Research Institute in Bangalore, Viswanathan, a metallurgist and Dr. Ramnathan who is with the Vikram Sarabhai Space Centre in Trivandrum.

But then it is not surprising, considering the intellectual traditions of the family, especially the figure of Raman, who must have set the standard for achievement in the family. Raman, was the towering figure in the family, though Chandrashekar's brothers deny that Raman had any effect on their careers.

The Raman-Chandrashekar family was an upper middle-class Brahmin family

Probably in view of the scientific temperament of the family, though they were religious, they were not orthodox and did not over-emphasise rituals. In fact, Vidya Shankar, a sister of Chandrashekar, remarks that the only important ritual in the family, was the 'aksharabhyas' (the ceremony performed in connection with a child's initiation into learning). The family was somewhat progressive, with Raman marrying outside his Brahmin sub-caste and his father Chandrashekar Ayyar expounding the equality of women and other such ideas which must have seemed revolutionary then. Chandrashekar's mother, Seethalakshmi, though not educated, wrote articles against dowry and had translated Ibsen's, *Doll's House* into Tamil. The book was later prescribed as a text for high school

students in Tamil Nadu. As Savitri, the younger sister of Chandrashekar recalls, they did not have too many silk saris like the other girls in the South. But their father would spend any amount of money to buy a violin or a book to add to his collection.

Like most Tamilian families, the family was musically inclined. Subramaniam Ayyar was a violinist, and the author of a treatise on music. His daughter Vidya is a noted musician in Madras and is the author of a book on Carnatic music. Raman, a lover of Carnatic music was fascinated by the different sounds produced by veena, violin, mridangam and tabla and carried out research in the fields of acoustics. Chandrashekar is not only a lover of Carnatic and Western music, but admired the dancer, Balasaraswati.

The family attached great importance to reading and literature, though this could only be a matter of secondary interest, science being the main goal in life. A noteworthy feature of the family is that they kept away from politics and politicians, though all of them, including Raman and Chandrashekar were deeply patriotic.

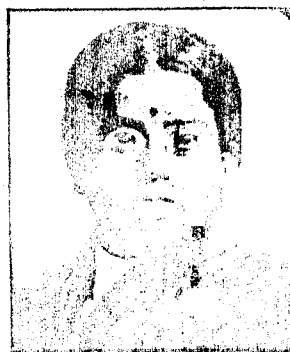
If Raman and Chandrashekar are the most outstanding members of the family, Chandrashekar Ayyar, Raman's father was distinguished in his own way. Though he

Chandrashekar Ayyar was the son of Ramanath Ayyar, a farmer with no exceptional talent. "If genius is hereditary, it certainly didn't come from Ramanath Ayyar," says Ramaswamy his grandson

exam and at the age of 15 was working as the assistant accountant in Calcutta. He, however, quit the job to devote his energies to research that would fetch him the Nobel Prize.



*Their son too won the Nobel. Subramaniam Ayyar and Seethalakshmi, Chandrashekar's parents.*



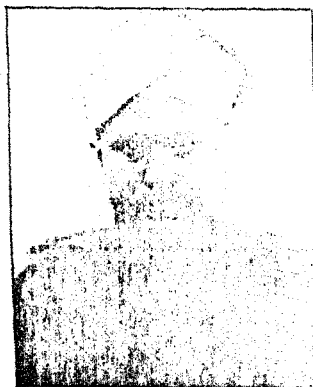
and Raman's youngest brother. Though the family belongs to Mangudi in Tanjore district, they later moved to Pomsakudi, also in Tanjore district. Mangudi, is noted for the muscular strength of its people and

There are several tales that are told of Raman's egotism. One of them relates to the time he was elected a Fellow of the Royal Society in 1924. At a meeting held in his honour of being elected to the Royal

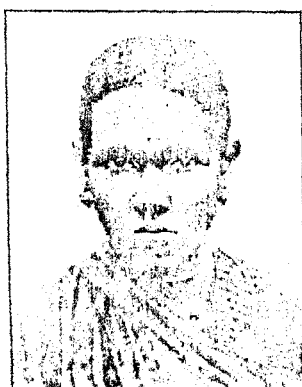
*When Raman topped every exam he took, Chandrashekar used to often not score above 100 per cent in maths, as he could solve all the problems in the question paper, and what is more get all of them correct!*

their tenacity of purpose, says Balakrishnan, the second brother of Chandrashekar.

Society, he said that he did not consider it the ultimate honour. He told the audience that he would get the Nobel Prize in another five years. The other story is more well-known. So sure was Raman of getting the Nobel Prize, that months before the announcement was even made, he had two tickets booked to Stockholm, so that he would be on time for the prize giving ceremony!



*Perhaps, it began with him. C.V. Raman's father Chandrashekar Ayyar and his wife Parvati*



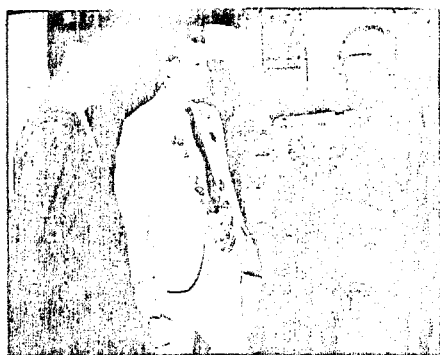
did not go beyond the BA level, he was a mathematical wizard and wrote several treatises some of which are still treasured by Chandrashekar. It may well be, Chandrashekar inherited his mathematical abilities from his grandfather. Chandrashekar Ayyar taught physics and maths at Mrs. A.V.N. College in Vizag, where he became the vice-principal before he died. A free thinker in his college days, he went around trying to prove that Madame Blavatsky, the founder of Theosophical Society, was a fake. What was even more surprising in a Brahmin was his physical prowess. He was a weight lifter and as the story goes once when challenged by a Muslim did 100 movements with the 'karla', a long club. It is after Chandrashekar Ayyar that Chandrashekar derives his name as also a host of his cousins. In fact, the oldest son of every one of Chandrashekar Ayyar's children is named after him.

Ramanath Ayyar had three daughters, whose children however did not distinguish themselves in any field. It is Chandrashekar Ayyar's children and their children who are marked by exceptional intellectual abilities. The most brilliant of Chandrashekar Ayyar's children was his second son, Raman, the first Nobel Prize winner in the family. Because of his precociousness, his genius was a foregone conclusion in the family, especially with Chandrashekar Ayyar, who it was believed knew his son would be a famous scientist one day.

Raman finished his school at the age of 11, and his master's degree at the age of 18, and stood first in every exam he took in his life. While in school, he mastered Galot's physics, and at the age of 16, wrote his first research paper that was published in the *Philosophical Magazine*, published from London. He topped the list of candidates appearing for the civil service

Raman was married to Lokasundari (which if translated would mean 'world beauty') and they have two children, Chandrashekar and Radhakrishnan. It is rumoured, that Raman's all-consuming passion for science and research left him little time for his family, a fact resented by his two sons. Little is known of the older son, except that he did law against his father's wishes. He lives in Madras and is hardly seen at any of the family gatherings. Radhakrishnan is an astrophysicist, and now heads the Raman Research Institute in Bangalore. After Raman's death, he was invited to head the Raman Research Institute. At the time of his father's death, he was in the United States. Scientists in Bangalore emphasise that Radhakrishnan was invited to head the Institute not merely because he was Raman's son, but because of his own academic distinction.

The oldest of Chandrashekar Ayyar's sons was Subramaniam Ayyar. In comparison to his more illustrious brother Raman, Subramaniam Ayyar's own achievements were underrated in the family as it happens, in families of high achievers. He was a wealthy man in Madras. In fact, Raman and Subramaniam Ayyar took the civil service exam in the same year, though Raman



*C. Ramaswamy did his doctorate after retirement!*

got the higher rank. Ayyar's accomplishments were literary and musical. He had a huge collection of books which he bequeathed to his children. They, however, felt the books should not be scattered among themselves and donated it to a lib-

*So sure was Raman of getting the Nobel Prize, that months before the announcement was even made, he had two tickets booked to Stockholm, so that he would be in time for the prize-giving ceremony!*

rary in Madras. Ayyar was a violinist and was responsible for a pioneering mathematical study of music.

His wife was Seethalakshmi, a sickly lady. It is noteworthy that though she knew she was dying, she let her son Chandrashekar leave for England. Chandrashekar was in England when she died. According to Balakrishnan, before she died, she had a vision and foretold the future of all of her children. She predicted that Chandrashekar would be a world famous scientist.

The family atmosphere in Subramaniam Ayyar's home in Madras, was mostly intellectual. "Our background was eminently cultural and literary," recalls Balakrishnan. "There were a lot of books around. During holidays, while other boys would think of going out, we used to sit in our rooms, working at maths, trying to store up our knowledge. Chandrashekar could do 125 problems in a day, and my brother Viswanathan and I would do a smaller figure." All of them were taught at home till they were 11 years old. Recalls Balakrishnan, "Our minds were not encumbered by a load of learned lumber . . . and each of us had his own special interest and were left in pursuit of that bent.

Though the atmosphere at home was intellectual, it was far from stuffy. Chandrashekar for all his brilliance was not a prig. When he was young, he would at times take to singing Tamil nursery rhymes with his brothers and sisters in a loud and outrageous tone. And when baffled visitors wanted to know what was happening, Chandrashekar would say, "Music sir, music."

Like his uncle, Raman, Chandrashekar too married a girl of his choice, Lalitha.

She was his neighbour and a year junior to him in college. According to Ramaswamy, she too was a girl of exceptional intelligence, but like a true Hindu wife, gave up her own interests, in the interest of Chandrashekar's own scientific pursuits. They do not have any children.

Raman and his brother Subramaniam Ayyar were not close, though Raman while passing by from Calcutta to Bangalore, would visit the family in Madras. According to Chandrashekar's sisters, relations with their famous uncle were cordial, though never overly affectionate.

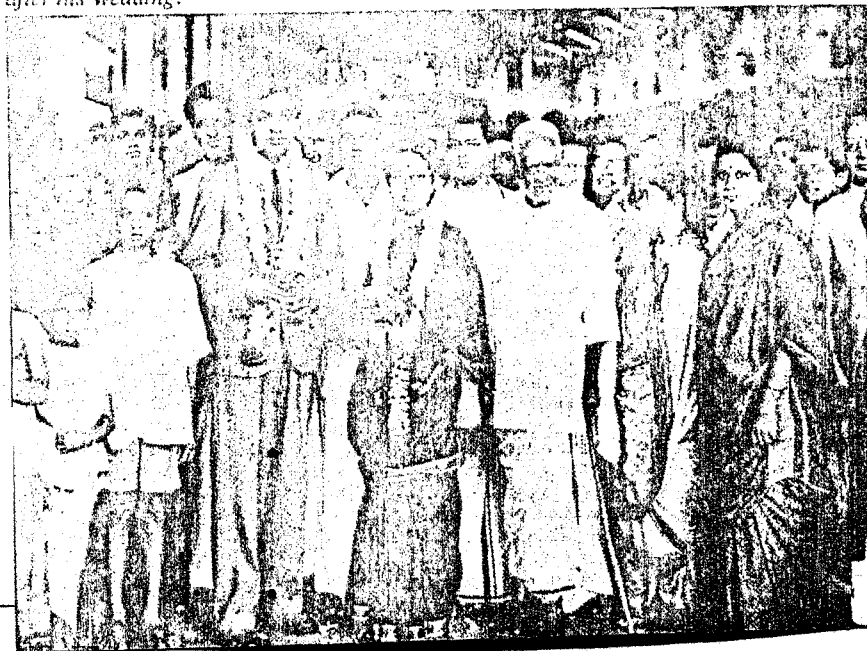
But it is said, Raman recognised the brilliance of his nephew Chandrashekar, of whom he was proud. Raman is believed to have remarked to a close associate, "Oh, he is far greater than I. He belongs to the class of Einstein." At another time he enquired of his brother Ramaswamy, why

Chandrashekar had not as yet received the Nobel Prize.

Chandrashekar's family denies Raman had any influence on him. But it was believed Subramaniam Ayyar persuaded Chandrashekar to take up physics, instead of maths, which he wanted to. But it is not known if this decision to persuade Chandrashekar to take up physics had anything to do with Raman's own achievement at that time.

Though Raman and Chandrashekar belonged to the same family, they were poles apart in their temperament. Raman was an intuitive genius, while Chandrashekar combined genius with hardwork. The hardwork Chandrashekar put into research was much more than Raman's own efforts.

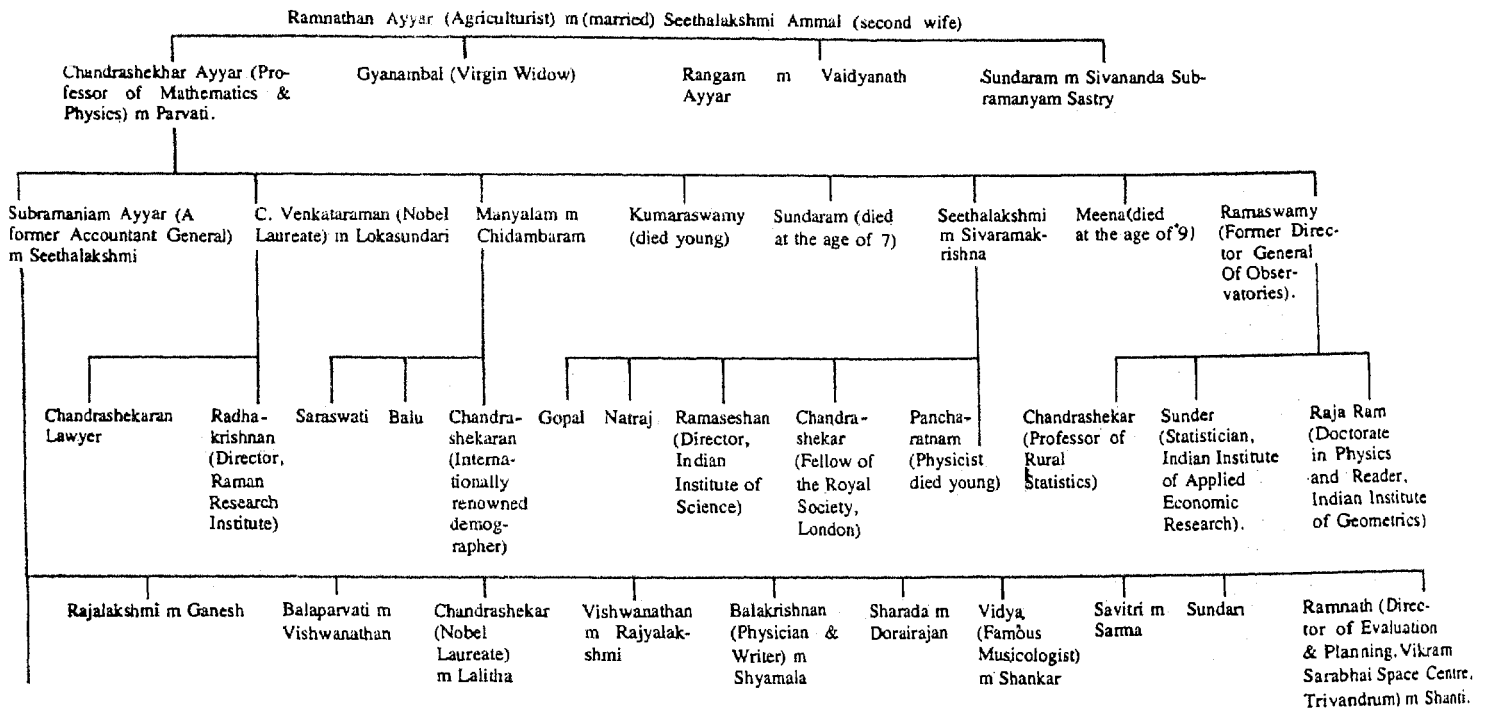
*The east west mix. The Ayyar family gather in strength to see of Chandrashekar after his wedding.*



Raman for instance would go to sleep by 9 in the night, and the house would be absolutely quiet to enable him to get a good night's rest. Chandrashekar, on the other hand, hardly used to sleep for long hours in the night and there were times when he would, as early as 3 in the morning and after a cold shower go to the observatory. While Raman was an experimentalist who organised others to do research for him, Chandrashekar is a theoretician and a behind-the-scenes worker. In fact, in the scientific world, Chandrashekar's achievements are rated higher than Raman's. While Raman was a flamboyant and extroverted, if somewhat egotistical man, Chandrashekar is known to be extremely reserved and introverted. His public speaking skills are nothing to rave about, whereas Raman was a fine speaker, whose lectures on science attracted large crowds, some even perching on trees and window-sills to listen to him.

Raman was against Indian scientists going abroad to do research. He felt, the best could be achieved within the country itself. But Chandrashekar wrote in a letter to his father, "I was in general agreement with his depreciation of the craze for foreign degrees, but I think he is overlooking the obvious when he says that those who have benefited by going abroad would have 'done infinitely better' by staying at home. I wonder how he can explain Ramanujam . . . . Anyone who has even a passing acquaintance with R's life will accede that he would have died unknown and unwept, if he had continued the last precious five years of his life in India. Again, on a different plane, I can assert that I could not have done 'infinitely better' had I continued in India . . ."

Apart from Raman and Subramaniam Ayyar, there was Kumaraswamy, who died of TB, just after he graduated. Though it is hard to predict anything because of his



early death, many in the family felt he would have done as well as Raman had he lived longer. The youngest of the brothers is C. Ramaswamy who retired as the Director General of Observatories. Like his brother Raman, though he was interested in research, he had to take up a government job. But what is remarkable about Ramaswamy is that he never let the spirit of original thinking die in him, and at the age of 64, after his retirement, he received his doctorate for his work on molecular spectra.

Chandrashekar's brother Viswanathan headed the metallurgical department at TISCO and won the President's gold medal for the best metallurgist in 1969. He had a phenomenal memory. While studying in London, he visited Stratford-on-Avon. There he saw several Shakespearean actors rehearsing their lines, and wanted to know what was so great about them, as any Brahmin boy could recite Shakespeare. On being challenged, he learnt the speeches of Hamlet in one day flat!

Balakrishnan, a man of medicine by profession is the author of several books in Tamil and English. Their youngest brother, Ramanathan received his Ph. D. from the University of Saskatchewan in Canada, and is currently the Director of Programme Planning and Evaluation at the Vikram Sarabhai Space Centre, Trivandrum.

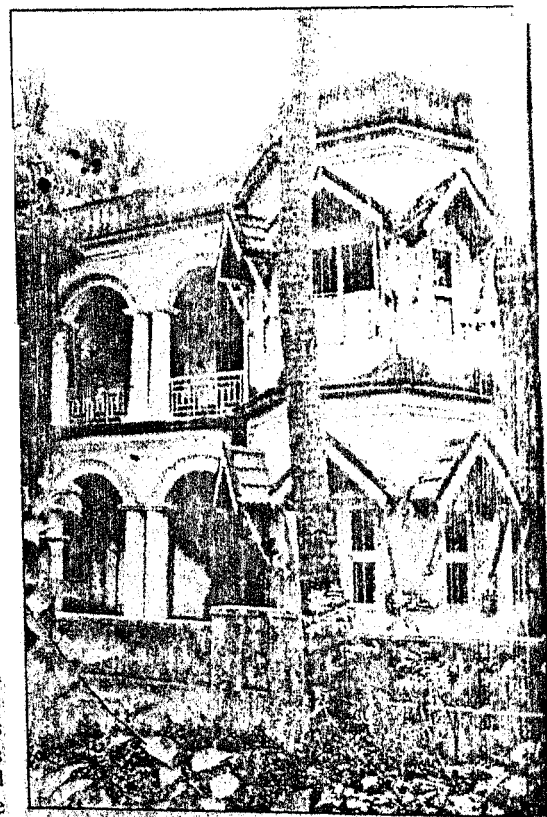
Of Subramaniam Ayyar's sister's children, there is, C. Chandrashekar, Mangalam's son. He is a doyen among demographers, known internationally and has served the U.N. for two spells.

*"Our minds were not encumbered by a load of learned lumber . . . and each of us had his own special interest and were left in pursuit of that bent."*

Seethalakshmi's children are equally accomplished. Ramaseshan received his doctorate for work done under his uncle, Raman. He is now the Director of the Indian Institute of Science. His brother Chandrashekar, who is with the Raman Research Institute in Bangalore was recently elected a Fellow of the Royal Society, making him the third person in the family to receive the honour. His book published in the prestigious Cambridge Monographs on physics is acclaimed internationally as an outstanding treatise, and is now a standard reference for researchers in that area. The most brilliant of Seethalakshmi's five children was, however, Pancharatnam, who died at the age of 35. A physicist who was inspired by Raman, three of his papers were published posthumously in the *Proceedings of the Royal Society*. In fact, it is said, Raman thought of him as a possible successor and had suggested he return to India to the Raman Institute.

What is noteworthy is that the tradition of education and scientific temperament is being carried on in the fourth generation as well. There are at least a dozen Ph.D's among Chandrashekar's nephews and nieces and many of them hold responsible positions in the United States.

Subramaniam Ayyar wrote some 34 years ago, "A country is great only because of its brilliant families who carry on the



*Home of the heroes. The Ayyar's traditional home in Madras.*

torch of intellectual, moral and spiritual tradition. . . The gene goes on.