

The Raman Effect

My first meeting with Sir Chandrasekhara Venkata Raman, the eminent physicist, is still fresh in my memory.

One day in 1948 I telephoned the Nobel laureate to ask if I could meet him at his convenience and photograph him for an illustrated feature. I was apprehensive about getting an appointment from so busy a person but was pleasantly surprised when he asked me, 'How much time would you need?'

'An hour,' I replied.

Raman went on to say that thirty minutes would do. I could see him the next morning, sharp at nine. 'Come on time,' he warned.

I dutifully reported my feat to Pothan Joseph, editor of *Deccan Herald* which was barely a month old. 'Be punctual and conduct yourself with grace,' advised Pothan. He told me that Raman was a man of quick temper, so I should not throw my weight about in his presence just because I was from the press. 'He may get angry if you direct him to act before your camera. He is particular about the rules he sets for himself,' he said.

I decided to take another person with me for moral support. My choice fell on my alter ego of those days, M.S. Sathyu, now a noted film director, but barely out of his teens then.

Contrary to our fears we found Raman extremely affable and gentle. He seemed very cooperative as I photographed him in his study, laboratory, library and the garden he loved. All this took twenty minutes and I still had ten minutes left to complete my job. Then, a bright idea struck me and I told Raman that I would love to photograph him with his wife. 'Forget about her. She is not here,' he said. And then a brighter idea came to my mind. Summoning the required courage, I asked the scientist, 'Sir, may I take one last, important picture? Will you please pose for me displaying your Nobel Prize citation?'

Pursing his lips, Raman gazed at me while my heart began to pound rapidly. He relaxed in a minute and to my utter surprise, said, 'Why not?' He went into a room to fetch the precious document.

'I'm lucky,' I whispered to Sathyu. I entrusted my brand-new Speed-Graphic camera to his care and set about adjusting the furniture and books in the room for the all-important picture. Raman had meanwhile returned, holding the scroll, and stood beside a blackboard which had the diagram of a galaxy and other mathematical calculations. He looked at me and exclaimed, 'It's getting late. Shoot!'

When I was about to take my camera from Sathyu who was standing in a corner, the silence in the room was shattered by the sound of metal hitting the ground. We looked around and found to our dismay that Sathyu had dropped the camera.

Raman's face was livid with anger. He walked up to Sathyu, gripped him by the collar and thundered, 'Do you know what you have done? You have damaged a beautiful instrument of science. Why weren't you careful?' We were shaken and mumbled our apologies. Our minds were a melange of shame, confusion and embarrassment. Raman's anger subsided within a minute. Holding the camera in hand, he carefully examined it as an experienced doctor would a patient. He wrote on a piece of paper, 'Prisms out of alignment. Replace one broken piece and realign. Set right the metallic dents.' He pressed his prescription in my hand and gave us the marching orders saying, 'You may leave now.' My first photo session with the Nobel laureate and Bangalore's most famous citizen, had ended in a fiasco.

My immediate concern was to get the camera repaired. I rushed to my friend Tom D'Auguiar who worked at the Central Telegraphic Office in Bangalore. Both of us were members of the Mysore Photographic Society. He suggested that I take my camera to his friend C.X. Lowe who owned the Elite Studio on South Parade, not far from the office where I worked. It took a week for Lowe to set right my equipment. I was delighted when I got it back from Lowe who refused to accept his professional charges, 'Let me keep this "prescription" that the famous scientist wrote for you.' I parted with my invaluable souvenir.

I met Raman again a couple of months later. By then I had been elected the secretary of the Mysore Photographic Society. We had organized an exhibition of international photographs and wanted him to

inaugurate the show at the Bible Society premises on South Parade. Raman readily agreed but made it clear that he would go round the exhibition and not make any speech.

I garlanded Raman. He smelt the jasmine strings as he looked at the pictures with a keen eye. At the end, he patted me on my back and said, 'It's a wonderful exhibition. I'm sure it will draw many visitors.' Raman was with us for a whole hour when some members coaxed and cajoled him to say a few words. Much to our surprise he made a little speech. I fidgeted in my chair as he recalled the fiasco during my first visit to his place. 'Now that he is secretary of your Society and has helped mount this beautiful exhibition, I will at last forgive him!' he said amid applause.

An hour had passed and the jasmine garland was still around Raman's neck. It was his habit to keep a garland on until he reached home to pass it on to his wife Lokasundari. Fairer in complexion but shorter in stature, shy and soft-spoken, she was Raman's ideal partner and shared his love for music, particularly the veena.

When he was about to get into his car, I asked Raman if I could visit him again for more pictures to complete my feature article. He willingly agreed. I did not go to see him immediately after the exhibition. I knew that he would be preoccupied with plans connected with his sixtieth birthday. It was celebrated in a grand manner in November 1948. Many of his distinguished students and colleagues were present at his home in the morning. They sat in a separate room animatedly chatting with each other while Raman performed a

private religious ceremony, sitting in front of the sacred fire with his wife. The whole house, filled with smoke emanating from the sacred fire, seemed to respond to the melodious chant of Vedic hymns. Wearing his dhoti in the traditional fashion, Raman came out for a short while as though to bless his students with a gentle nod of his head. I noticed the sacred thread that was conspicuous on his bare chest and the pigtail dangling behind his head. His forehead was smeared with sacred ash. The knight-errant of Indian science looked like a Brahmin priest from a south Indian temple. My fingers itched to freeze-frame him, alas, I could not dare open my camera. The private religious function was not open to the press.

The felicitation function in the evening, presided over by Sir Arcot Ramaswamy Mudaliar, the dewan of Mysore, was a grand one. Looking regal in his black long coat and turban, Raman sat beside Mudaliar. I was there with my camera, all ready to record the event. Before the meeting began, Raman, who was in a jolly mood talking to his many friends, sighted me in the press enclosure and beckoned me to his side. I had already established a rapport with him. He held my hands in an affectionate grip when I went up to offer my congratulations.

Two weeks later when I went over to his place, I found him in the company of children from a local convent. Raman bubbled with joy in their company, answering their questions in his characteristic, simple way. I followed him as he led them into a room saying, 'I will show you something beautiful.' Our eyes were focussed on a variety of stones of many sizes and

shapes, besides crystals and minerals that had been beautifully displayed in the dark-walled room.

'They look ordinary to your eyes, don't they?' he asked.

'Yes, sir,' the children chorused.

Instead of remaining a silent onlooker, I ventured to say, 'I like their shapes and unusual texture. But I wouldn't call them beautiful.'

'Nonsense,' he retorted. 'What subjects did you study at college? Humanities, I suppose.'

'Yes, sir.'

'No wonder. You don't seem to know even the rudiments of science. Colleges don't teach much.'

Raman suddenly switched off the light. Standing in the centre of the dark room, he switched on a portable ultraviolet lamp and panned it on the exhibits. The stones and minerals came alive and began to glow in breathtaking bright colours—violet, indigo, blue, green, yellow, orange, red and their myriad combinations. Raman had transported us into a fairyland. 'Alice in Wonderland!' a little girl screamed in joy. The delighted scientist joyously hugged her and planted a soft kiss on her tender cheek.

Having shown us the beauty of nature as revealed by physics, Raman went on to explain the scientific basis of the fascinating phenomena of fluorescence and phosphorescence. 'You must have seen the glowworm at night,' he said and gave us a lucid, easy-to-grasp scientific explanation about what we had seen. He also spoke about the discovery of what came to be known as the Raman Effect, which concerns the molecular diffraction of light and won him the Nobel Prize for

physics in 1930. He claimed that the blue of the sea was due to the molecular scattering of light and was not a case of reflection of the sky on water as most people imagined. Raman had the knack of explaining the most abstruse scientific phenomena in a language that ordinary people could understand.

Over the next few years I established a closer, affectionate rapport with Raman and showed him all the pictures I had taken of him earlier. I visited him often but only after getting a proper appointment.

One lucky day, I found Raman in an expansive mood when he told me the story of his trip to Sweden to receive the Nobel Prize. He recalled what he had said to the members of the University of Calcutta who had gathered to felicitate him after he was conferred the Fellowship of the Royal Society.

'I'm not flattered by the honour done to me. This is a small achievement. If there is anything that I aspire for, it is the Nobel Prize. I shall get that in five years.' These words seemed shorn of modesty but they were indicative of his determination to achieve whatever he wanted. And precisely at 7 p.m. on 8 February 1928, C.V. Raman fulfilled his promise by a discovery so vital and so far-reaching in its effects on modern scientific knowledge that the award of the Nobel Prize for physics to him became a certainty. It was the same spirit of adventure that compelled him to go to Sweden in order to receive the prize in November 1930, even before the awards for that year were announced. His optimism and meticulous planning were such that he reserved berths for himself and his wife on the ocean liner to Sweden five months in advance.

His eyes were moist when he narrated to me the story about the award ceremony in Stockholm. 'It is celebrated with much pomp and dignity. There were about 10,000 persons in the assembly. The Swedish king was in the chair. Five persons had to receive the prizes. All of them were seated in their chairs flanked by their countries' flags. I was sorry to see that I was under the British flag. India was still under British rule. The Civil Disobedience Movement was in full swing and Mahatma Gandhi was in jail. I was overcome by emotion when my name was called and I went up to receive the prize.'

My last photo session with Raman was sometime in the 1960s, during the All India Congress Committee session held at Sadashivanagar in Bangalore, not far from the Raman Research Institute in Hebbal. I had arrived in Bangalore from New Delhi with my friend Donald Connery, to cover it for the American magazines *Time* and *Life* of which he was a correspondent. Having extensively photographed the meeting, I suggested to Connery that we take a break from the politicians and spend some time with Raman. When I telephoned the scientist, he was happy to hear my voice and the progress I had made in my career from the humble beginnings he had known. 'Bring your American friend along,' he said, and this delighted Connery.

We met Raman at the institute he had set up with an eye for thoroughness and meticulous detail. During the interview, Connery asked him a number of questions on a variety of subjects which the scientist answered with his characteristic candour, while I continued shooting pictures. Raman told him how greatly he

admired Nehru and recalled the day in 1949 when the prime minister spent a long time at his institute. 'Nehru was fascinated by my collection of diamonds, stones and minerals, and the gorgeous spectacle that unfolded before him when I turned on the ultraviolet lamp on them in the dark room.'

The two hours we spent with the Nobel laureate seemed like two minutes. Connery was full of admiration for Raman who was brutally frank and unafraid when he spoke, sometimes caustically. 'While I admire Nehru personally, I dislike the cronies around him,' he remarked. He referred to the AICC session as 'a big tamasha where they just talk, talk and talk from morning till night'. When he was asked for a quick solution to India's food problem, Raman said, 'We must stop breeding like pigs and the matter will solve itself.' His aversion to politics and politicians was well known. Apparently, he was once offered the 'vice-presidency' of the Indian Republic, which he politely declined, saying, 'What will I do with that ship?'

A story goes that when Raman was once speaking at a gathering on cyclotrons he abruptly stopped talking and walked up to an elderly person to pick up his cane. He returned to the rostrum and began swirling the cane above his head. As the movement picked up speed, Raman asked the gathering, 'Tell me what will happen if I let go this cane now.' No one answered. All the faces in the assembly exuded grave concern. Raman was still swirling the cane. 'Don't be scared,' he told them in a baritone voice. 'It will of course travel towards one of you to break the head. I won't let that happen. I was only explaining to you the cyclotron principle.'

At a felicitation function in his honour on his eightieth birthday, speaker after speaker praised Raman. One of them compared his intellect to a diamond—hard, brilliant and multifaceted. Raman intervened to say, 'I wish someone had said that I also had the heart of a lion.'