

C. V. Raman is dead

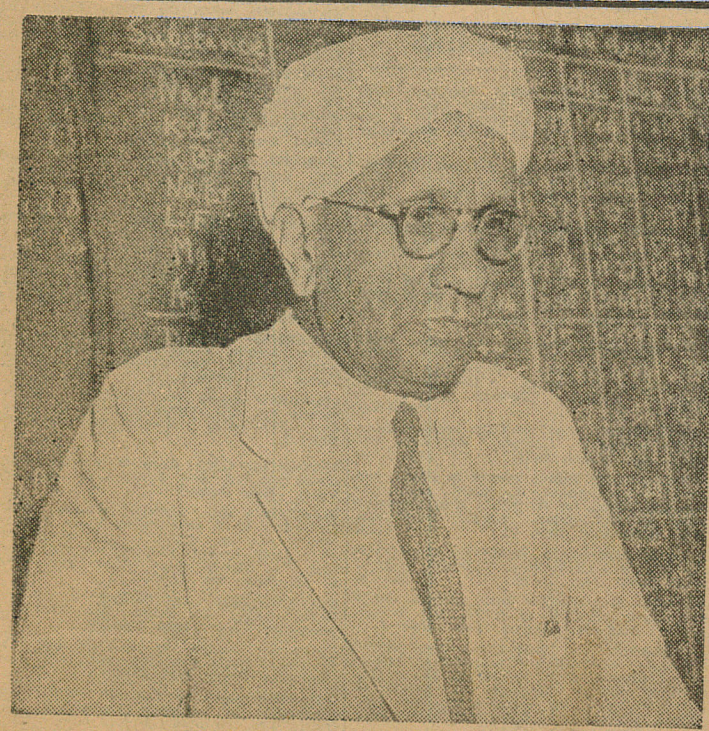
Bangalore, Nov. 21 (UNI, PTI)—Eminent physicist and Nobel laureate C. V. Raman died at his residence here early this morning following a heart attack. He was 82.

The body was cremated in the evening in the 20-acre compound of the Raman Research Institute, where he had lived and worked for nearly a quarter of a century. In accordance with his expressed wishes, the funeral was without any religious rites.

Dr Raman, whose death leaves India without a Nobel Prize winner, had returned home from hospital only two days ago after having undergone treatment for a mild heart attack. His wife, Mrs Lokasundari Raman, 77, and one of their two sons were by his bedside at the time of death.

His son, Mr Radhakrishnan, lit the funeral pyre before a small gathering of mourners consisting of his own students, friends and relatives.

The Mysore Chief Minister, Mr Veerendra Patil, and the Law Minister, Mr K. Puttaswamy, were present.



Dr C. V. Raman

An effective discovery

Bangalore, Nov. 21 (PTI)—Raman Effect, which earned Dr C. V. Raman the Nobel Prize for physics in 1930, is defined thus: "When a homogeneous and chemically defined substance is irradiated with monochromatic light, part of the energy of light is subtracted from the incident pencil and diffused by the molecules. The most important part of the scattered light is that possessing the same frequency as the incident radiation, but a definite fraction of the energy of light which is scattered by the molecules, undergoes a change of frequency."

The Raman Effect discloses itself in the spectrum of the scattered light as added lines adjacent to the original line in the incident light.

In the first decade after its discovery, 1928-38, 1,700 scientific papers were devoted to it.

Glowing tributes to Raman

Great loss

Prime Minister Indira Gandhi said: "Dr Raman's passing away is a great loss to our country. He was active till his last moment. He was an inspiration to countless young people in our country. He was never too busy to talk to young people and explain the various natural phenomena to them."

"I met him first when we were travelling together by ship from Bombay to Marseilles. It was one of the most fascinating trips in my life for every day he had something new to tell and in such a way that it absorbed our whole interest."

"Mrs Raman stood by him through achievements and difficulties. My condolences to her."

The Vice-President, Mr G. S. Pathak, in a message to Mrs Raman said: "Deeply grieved to learn of the sad demise of Dr Raman, doyen of Indian scientists. Kindly accept my heartfelt sympathies and condolences in your bereavement."

Dr S. Radhakrishnan, former President, said: "Extremely shocked and grieved to hear of the passing away of my dear, good old friend Raman. It is a personal loss to me. A towering personality, his indomitable spirit in the quest of knowledge inspired generations of Indian scientists. In his death India and the world have lost a great scientist."

National Professor and eminent physicist Dr Satyen Bose said Dr Raman's death was a "great national loss and the void created by it will be difficult to fill."

Dr Bose, who was Dr Raman's colleague in Calcutta University, said: "He was a great orator, a high idealist and a devoted scientist. In his death we have lost a great genius in the field of science who earned for the country international fame."

Devoted scientist

Dr A. Lakshmanaswami Mudaliar, former Vice-Chancellor of Madras University, said: "Dr Raman, the most outstanding scientist of India, was a towering personality in the educational and scientific field. His brilliant exposition of the most complicated scientific subjects could hardly be excelled by anyone else. His loss is irreparable and I trust his disciples, spread all over, will emulate his example."

The Union Education Minister, Dr V. K. R. V. Rao, in a message to Mrs Raman said: "I regret the passing away of one of the world's greatest scientists."

"All of us in India felt proud of him because he had his academic training entirely in India and yet became the country's first and only Nobel laureate in Science. There is no parallel to such an achievement among the scientists of the world. The whole country shares with Mrs Raman her grief in the losses he has sustained. I also send my respectful condolences."

Mr Veerendra Patil said the scientific world has lost a great figure who dominated the scene for well over half a century. "Bangaloreans feel anguished at the death of this great scientist."

death of Sir C. V. Raman, though at the ripe old age of 82, India has lost one of her greatest sons. It was his achievement that raised the status of our country. His was a life dedicated to the pursuit of knowledge with single-minded devotion and energy."

Mr C. Rajagopalachari said he was one of the great scientists of India.

"To the end he loved and worked for the progress of science and helped young men to grow up in dedication to the growth of science. His Academy in Bangalore has done great work in all these directions," Mr Rajagopalachari added.

All Mysore Government offices, the judicial magistrates' courts and educational institutions in Bangalore were closed for the day.

The Indian Institute of Science, of which Dr Raman was the first director, in a condolence resolution described Dr Raman as an "outstanding torch-bearer" of science.

CSIR closed

The office of the Council of Scientific and Industrial Research in New Delhi was closed for the day after CSIR scientists paid tributes to the Nobel laureate at a condolence meeting.

The CSIR Director-General, Dr Atma Ram, in a message from Banaras said Dr Raman had brought glory to India and to Indian science in an era when the world had not heard much of Indian science. His death had deeply shocked the scientific community of India.

The University of Lucknow remained closed for the day after adopting a condolence resolution.

The Vice-Chancellor, Dr M. B. Lal, paying tributes said: "It has come as a very great shock to all of us. Dr Raman was one of the most distinguished physicists of the world. In his death, the country has lost a very great scientist. He was associated with the University of Lucknow since 1944, when the university had conferred on him the honorary degree of Doctor of Science. He had also delivered the convocation address of the university in 1943."

Dr K. R. Surange, Director, Birbal Sahni, Institute of Palaeobotany, Lucknow, said, "We have lost a great scientist. The void created by his death is not easy to fill."

Dr S. H. Zaidi, Director, Industrial Toxicology Research Centre, said, "We are very sorry. It is a great loss to the science and the country."

The Director of the Central Drug Research Institute, Dr M. L. Dhar, in a message said the passing away of the greatest of India's scientists would be mourned with profound grief and Dr Raman's inspiring example would be cherished by scientists all over the world.

Life-sketch

Chandrasekhara Venkata Raman was born at Tiruchirappalli in Tamil Nadu on Nov. 7, 1888. His father was a professor of mathematics and physics at the A.V.N. College, Visakhapatnam. Raman took his bachelor's and master's degrees with highest distinctions. While an undergraduate at the Presidency College, he undertook original investigations in acoustics and optics. His reports were published in Nature and Philosophical Magazine in 1906 when he was 18.

Through competitive examination in 1907, Raman secured appointment as a gazetted officer of the Indian Finance Department

and for the next 10 years, until July 1917, he served as an official of the Union Government, most of the time in Calcutta.

Circumstances rather than tastes led young Raman to choose a career in Government service. While serving the Government, he continued his work in science.

Academic circles in India took notice of his talents when in 1917, the Palit professorship of physics was offered to him. Acceptance meant sacrificing a lucrative Government job, but he made the choice.

Dr Raman occupied the Palit professorship for 16 years, until 1933, and at the same time served as secretary of the Indian Association for the Cultivation of Science.

For over 25 years, Dr Raman did most of his experiments in the Laboratory of the Indian Association at Calcutta. This work had placed him in the foremost rank of the world's physicists and had brought to India recognition as one of the leading nations where science was cultivated.

Raman effect

As Palit professor, Dr Raman made his first visit to Europe when he attended the Congress of Universities of the British Empire at Oxford in 1921.

It was during that year, Dr Raman began work on the scattering of light and by 1924 he had attained such eminence in the field that he was invited to open a symposium on the scattering of light at the annual meeting of the British Association for Advancement of Science held at Toronto, Canada. His researches on the scattering of light led to the discovery of the phenomenon that bears his name—the Raman Effect.

The Royal Society of London made him its fellow in 1924. The British Government knighted him in 1929. Following his discovery of the Raman Effect came the Huges Medal of the Royal Society and the Nobel Prize in Physics.

The degrees and honours conferred upon him, both by Indian and foreign universities and associations, run into three foolscap sheets. Some of the outstanding honours are: Franklin Medal by the Franklin Institute of Philadelphia, National Research Professor of Physics, Foreign Associate, Paris Academy of Sciences (1949), Bharat Ratna (1954), International Lenin Prize (1957), Foreign Member, Soviet Academy of Sciences (1957). Appointed Member, Pontifical Academy of Sciences by Pope John (1961).

Mr H. N. Sethna, director, Bhabha Atomic Research Centre, said: "Dr C. V. Raman was an outstanding scientist whose epoch making discovery of the Raman effect was really the beginning of modern science in India."

Prof. R. S. Krishnan, of the Indian Institute of Science, Bangalore, said that in the passing away of Dr Raman the world had lost a great scientist.

University Grants Commission chairman D. S. Kothari described Dr Raman as "a living and dynamic part of the Indian scientific scene for more than 50 years."

The Governor of Mysore, Mr Dharama Vira, now in New Delhi, said, in a message of condolence: "In him not only have we lost an eminent scientist but also a person who by his dedication and example had inspired thousands of young men to work in the service of science."

Campus cremation

The body was carried by students and admirers from the main house to the lawn of the institute, a distance of about 100 metres to enable the mourners to pay their homage. The Chief Minister laid a floral wreath on the body on behalf of the State Government before it was consigned to fire. Several others also laid wreaths.

The Mysore Government respected the last wishes of Dr Raman and allowed the cremation of his body inside the campus of the institute as a special case.

Normally cremation is not allowed in any private campus. Burial is allowed in exceptional cases.

Dr Raman's body was draped in new clothes. The familiar turban was not there when it was placed on the stretcher from the cot where the body lay since morning. Wreaths and flowers covered the body.

No photographer was allowed to enter his house and take snaps. However, some managed to take photographs at the time of the funeral outside the house.

The staff of the institute proposes to put up a tablet on the spot.

Dr Raman, whose discovery of a property of light known as the Raman Effect brought him world fame, won the Nobel Prize in 1930. He was conferred the Bharat Ratna in 1954.

Dr Raman, who had been keeping indoors since his discharge from the hospital, woke up as usual at 6 a.m. and had his bed coffee. He then rested on the bed and the end came at 7-25 a.m.

It was peaceful, according to his son.

On hearing the sad news, people from all walks of life rushed to the hitherto-secluded institute to pay their homage.

"Science is my religion and I intend to pursue it till the end," Dr Raman said last month before he suffered a severe heart attack on Nov. 4, three days before his 82nd birthday.

Within a week, Dr Raman recovered and shifted to his residence at the institute here. When newsmen called on him a few days ago, he said waving his

Continued on page 6

Continued from page 1
hand in his inimitable style: "It is all over."

According to one of his former students, Dr Raman was conscious till the end, which came suddenly.

After his discharge from the hospital he had made a remarkable recovery. He even started sitting in his bed and reading books, much against the wishes of his relatives. His condition suddenly started deteriorating yesterday morning, but he recovered in the evening. He talked to his wife and others in his usual humorous way on a variety of subjects. He referred to Mahatma Gandhi, Christ and others.

TRIBUTES
President V. V. Giri led the nation in paying tribute to the late "Grand Old Man of Indian Science."

Mr Giri said in the death of Dr Raman India has lost "a Grand Old Man of Science" who had brought lustre and fame to his country.

In a condolence message to Mrs Raman, Mr Giri said: "I am deeply grieved at the demise of your distinguished husband. The country has lost a Grand Old Man of Science who brought lustre and fame to his country."

"Till his last, he dedicated himself to a relentless pursuit of progress of science and infused in the youth a spirit of research and invention."

My respectful condolences to you."

Researcher at 13

Bangalore, Nov. 21 (PTI)—"Are you sure you belong to the B.A. Class," the Professor of English sternly asked the boy.

"Yes Sir, I am," the boy replied, confidently.

"How old are you?," was the next question.

"Thirteen," came the answer.

The surprised professor was taken aback when he found that the boy was not only a student in a BA class but was carrying out original research on acoustics and optics, which was later published in "Nature" and in the "Philosophical Magazine" of London.

The brilliant boy was none other than Dr C. V. Raman. This incident, which occurred nearly 10 years ago, was one of Dr Raman's favourite anecdotes.