C. V. Raman

A BIRTH CENTENARY TRIBUTE • AN EXHIBITION ON LIFE & WORKS OF PROFESSOR C.V. RAMAN

BIRLA INDUSTRIAL & TECHNOLOGICAL MUSEUM
NATIONAL COUNCIL OF SCIENCE MUSEUMS
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PREFACE

Chandrasekhar Venkata Raman was born near Tiruchirapally in Tamil Nadu on November 7, 1888. He passed his Matriculation at the age of 11 and at 18, became Assistant Accountant General and was posted at Rangoon, Nagpur and finally, at Calcutta which was to be the cradle of his burgeoning genius that gradually blossomed into a beautiful flower scattering an enduring perfume all over the globe. It was in Calcutta that Raman found his scientific haven in the Association for the Cultivation of Science, a green aspiring sprout, in a country, where scientific research at that period had a lean chance of survival and to grow into maturity. Calcutta University offered him the prestigeous Palit Chair for Physics and Raman, without hesitation, gave up the lucrative prospects of the finance service and accepted the Palit Professorship for the sake of science. Raman, for whom science was a passion, plunged instantly into deep scientific research not confining his field of enquiry to a limited sphere but by exploring the whole gamut of knowledge that came his way. A series of papers published in various first-ranking scientific journals in quick succession brought him at par with some of the leading scientists of his time and along with it came recognition from various countries in the form of awards and memberships to learned societies. In the field of acoustics his papers toppled some established laws. On the optical side he shed new light on the origin of blue colour of the sea and had put the older theories into a shadow.

Finance Department, standing first. Appointed Assistant Accountant General at Calcutta.

1910 Transferred to Rangoon and after a spell of leave taken due to the sickness of his father, posted at Nagpur.

1911 Posted, on promotion, at Calcutta.

1912 Awarded Curzon Research Prize.

1913 Ashutosh Mukherjee persuaded the Palit Board to offer Palit Professorship in Physics to Raman—then only 25 years of age.

1914 Lectured at the Madras University.

1917 Left Finance Department and joined Calcutta University as Palit Professor of Physics.

1919 Elected Secretary of the Indian Association for the Cultivation of Science.

1921 Went as delegate of Calcutta University to the Congress of the Universities of the British Empire held at Oxford.
Met J. J. Thomson, Rutherford, and other British physicists.
Started studies on the scattering of light. Awarded Honorary degree of D. Sc. by Calcutta University.

1922 Lectured at Madras University as a visiting professor.

1923 Frequency (colour) change in light due to scattering first observed by Ramanathan, a pupil of Raman, but the observation was not understood.

1924 Visited Canada and opened a symposium on the scattering of light in Toronto.
Attended Franklin centenary celebrations in Philadelphia.
Elected fellow of the Royal Society of London.
Helped start Indian Journal of Physics of which he was the first editor.

1924-25 Visiting professor at the California Institute of Technology, at the invitation of Prof. R. A. Millikan.

1925 Visited Russia at the invitation of the Russian Academy of Sciences, for its bicentenary celebrations.
Lectured at the Mandeleyev Congress.

1926 Delivered the convocation address at Banaras Hindu University.

1927 Published 155 page article entitled Musikistrumente und ihre Klange, in Handbuch der Physik, as a result of a special invitation.

1928

Feb. 16 Sent a communication, written jointly with K. S. Krishnan, on the discovery of the effect (now bearing Raman's name) to the London Journal, Nature. Published on 31st March, 1928.

Feb. 28 Raman announced the discovery publicly.

Mar. 8 Another letter sent to Nature (by Raman only).

Mar. 16 Delivered an address at Bangalore to the South Indian Science Association on the "New radiation". (Published in April-May issue of the Indian Journal of Physics) On return to Calcutta, the address was printed overnight and thousands of reprints were distributed to scientists all over the world on 31st March 1928.

Mar. 22 Sent still another letter jointly with Krishnan to Nature on the new discovery. A spectrogram showing the displaced Raman lines published for the first time.

Aug. 7 Awarded Matteucci Medal by the Italian Society of Science.

1929

June 3 Knighted by King Emperor George V of England.

Invited by Faraday Society to open a discussion on Molecular Spectra and Structure, at Bristol.

Elected General President of the Indian Science Congress.

Received honorary degree of Ph.D. from Freiburg University.

Received honorary membership of the Physical Society of Zurich.

Awarded Hughes Medal of the Royal Society of London.

1930 Awarded Nobel Prize in Physics.

1932 Conferred honorary D. Sc. degree by the University of Paris.

1933 Left Calcutta for the Indian Institute of Science at Bangalore, more or less unceremoniously, to become its first Indian Director.

1934 Founded the Indian Academy of Sciences on 24th April 1934.

1935 Maharaja of Mysore gifted land to Raman for establishing a research institute.

1937 Attended International Congress of Physics in Europe.

1941 Awarded Franklin Medal by the Franklin Institute, Philadelphia.

Elected member of the Optical Society of America.

Organised symposia on the physical properties of diamond.

Delivered Gaekwar Foundation lectures on physical optics, published later in 1959.

1948 Attended an international conference on "Diffusion Moleculaire de la Lumiere et la Effect Raman" at Bordeaux in France, where an honorary doctorate was conferred on him.

1954 On the Republic Day the highest honour, "Bharat Ratna" was awarded to Raman.

Received the International Lenin Award.

1957 Elected Foreign Member of the Soviet Academy of Sciences.

1961 Appointed member of the Pontifical Academy of Sciences by Pope John XXIII.

1964 Honorary degree of D.Sc. was conferred on Raman by the University of Delhi.

Attended an international congress on Crystallography at Harvard, USA.

1949 Raman assumed charge of the Raman Research Institute at Bangalore at the age of 61.

Appointed National Professor by the Government of India, the first to be so honoured.

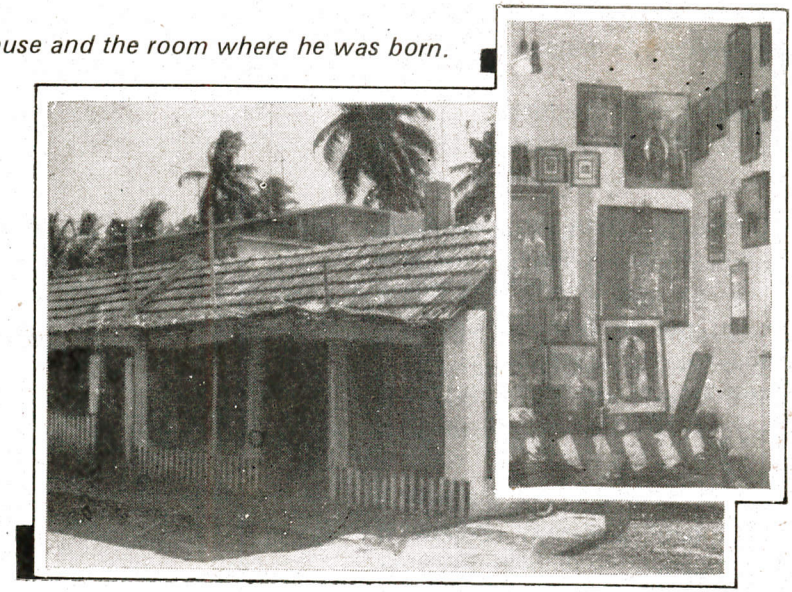
Elected Foreign Associate of the Academy of Sciences of France in succession to the mathematician G.H. Hardy.

1951 Organised a symposium on Thunderstorms. Raman took much interest in meteorology in later years.

1959-67 Wrote a number of papers on the physiology of vision, published in book-form in 1968.

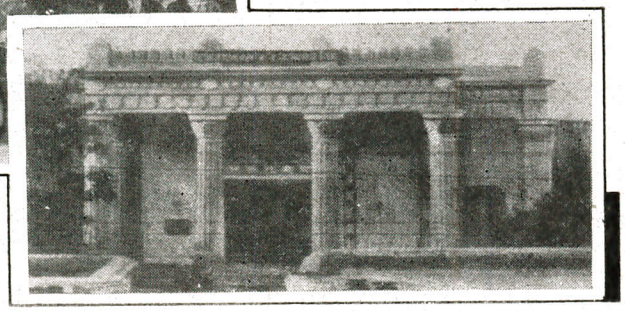
1970 Died in the early hours of morning on 21st November, at his official home in Bangalore, at the age of 82 years, leaving behind his wife and two sons. Cremated in the premises of the Raman Institute in accordance with his wishes.

The house and the room where he was born.

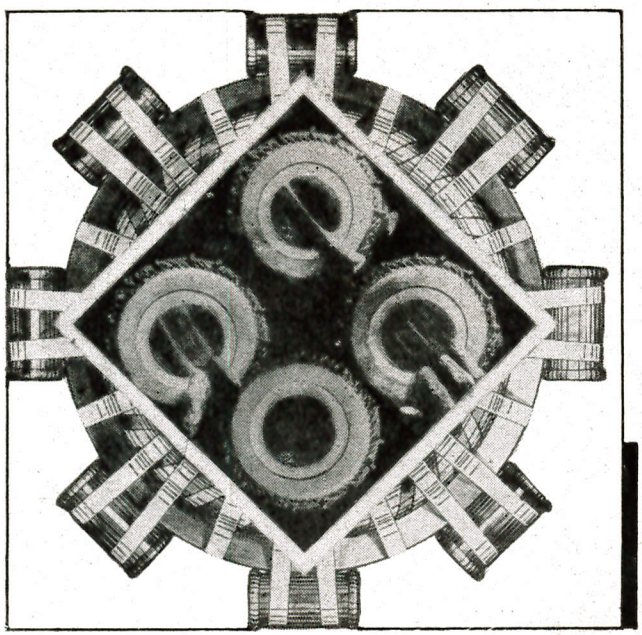


Raman was born in a small village of Thiruvanaikkaval near Tiruchirapally in Tamil Nadu.

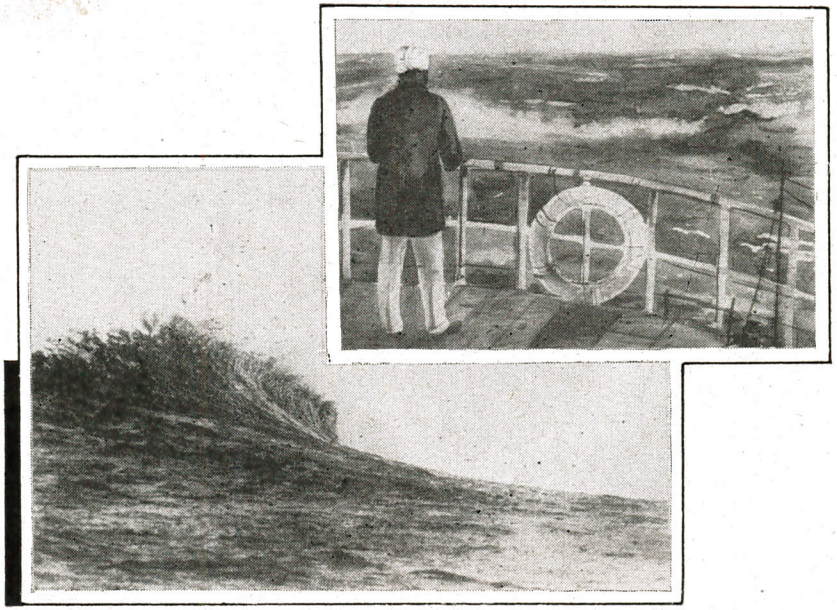
A group photograph showing Raman as a student at the Presidency College Madras. Raman at the 2nd row from top, fourth from right.



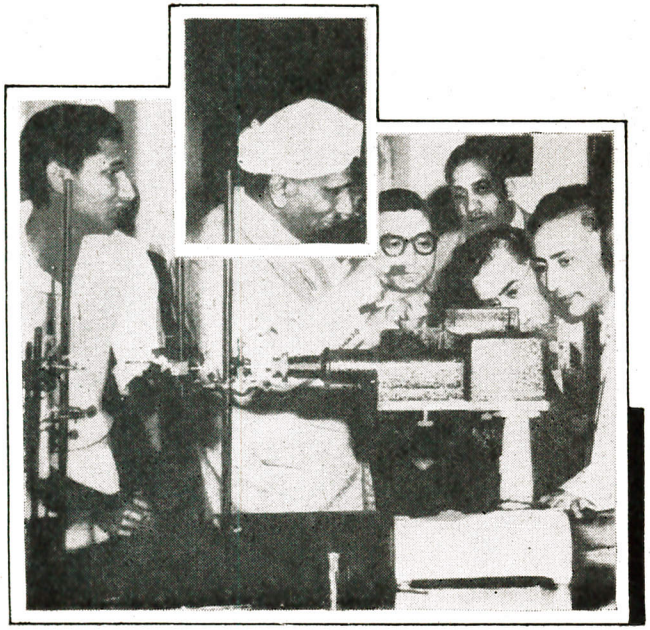
The Indian Association for the Cultivation of Science at 210 Bowbazar Street where Raman carried out scientific research for 25 years and did his Nobel Prize winning work.



Raman did researches in musical acoustics and found that the Indian instruments tabla and mridangam give musical sound but other drums produce noise. He also proved that some established laws on vibration of strings are violated by the Indian stringed instruments Veena and Tanpura.



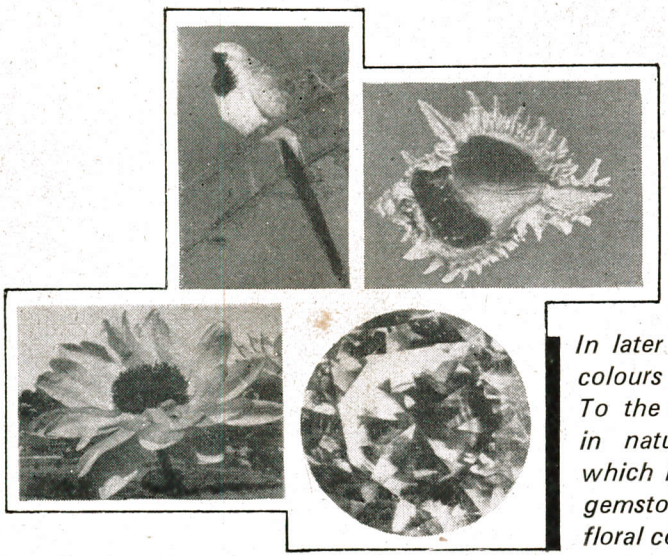
While going to England by sea, Raman was fascinated by the blue colour of the Mediterranean sea and by eliminating the reflection of the sky by a nicol he found that the blue colour was enhanced. He concluded that the blue of the sea was not due to the reflection of the sky as suggested by Lord Rayleigh but was due to molecular scattering of light.



Raman's work on optics culminated in the discovery of 'Raman effect'. A monochromatic light, after passing through a liquid, can absorb from or give energy to the liquid. In both cases the frequency of the original light gets modified and in the spectrum higher and lower frequencies appear. Raman was the first to obtain it experimentally.

Raman was awarded the 1930 Nobel Prize in Physics

He came in contact with the renowned scientists of his times and was invited to lecture at different Universities abroad as visiting professor.



In later life Raman was deeply engrossed in researches on colours of natural substances and their physical properties. To the end of his life he remained fascinated by the colours in nature. He published a large number of papers on Diamond which he called "the most remarkable of all solids", colour of gemstones, physiology of vision, colours of plumage of birds, floral colours of indescent shells and on many other subjects.

Acknowledgements

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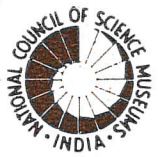

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