



JOURNEY
INTO
LIGHT

Life and Science of
C.V. RAMAN

1950-1955

1955-1960

Nobel Prize for Raman

I propose this writing to speak to you on a new kind of radiation or light-scattering from atoms and molecules. To make the significance of the discovery clear, I propose to place before you the history of the investigations made at Calcutta which led up to it. Before doing so, however, a few preliminary remarks regarding radiation from atoms and molecules will not be out of place.

Various ways are known to the physicist by which atoms or molecules may be excited to emit light, as for instance, heating a substance or bombarding it with a stream of electrons.

1. The whole edifice of modern physics is built up on the fundamental hypothesis of the atomic or molecular constitution of matter. In common with other branches of the science, physical optics has in concern itself intimately with the attributes of these molecules or atoms under different conditions and in different

Raman resigns Directorship

The light scattering in various directions from atoms or molecules and is referred to as Rayleigh scattering. It is also possible to excite the molecules by means of light of a wavelength shorter than that of the scattered light. This is called Raman scattering. Such light may be referred to as secondary radiation. The former diffused light is called primary radiation. The latter is called secondary radiation, but strictly speaking it has the same nature as the primary radiation. The difference between the two is that in the former the molecules are excited to a state of vibration and in the latter they are excited to a state of rotation. The difference between the two is that in the former the molecules are excited to a state of vibration and in the latter they are excited to a state of rotation. The difference between the two is that in the former the molecules are excited to a state of vibration and in the latter they are excited to a state of rotation.

Why is the sky blue? Raman explains to children

It would seem proper to give a brief historical introduction to the phenomenon of scattering of light in gases, liquids and solids. The experiments for the solution of which were done are numerous from Rayleigh's continuous theory of the blue sky. It is known that our laboratory studies would furnish a solid foundation for the explanation of such natural phenomena as the blue sky and the colour of sea water. In this connection, it is interesting to mention that the experiments were done by us in the laboratory of the Indian Institute of Technology, Kharagpur, in 1929, a preliminary survey was made in 1928. The results of these experiments are published in the Indian Journal of Physics, Vol. 1, Part 1, 1929, and in the Quarterly Review, Vol. 1, Part 1, 1929. The results of these experiments are published in the Indian Journal of Physics, Vol. 1, Part 1, 1929, and in the Quarterly Review, Vol. 1, Part 1, 1929.

Raman critical of Government

The Government of India has been criticized for its policy towards the Indian scientific community. Raman has expressed his dissatisfaction with the lack of support and resources provided for research in India. He has pointed out that the Indian scientific community is being neglected and that the Government should take steps to improve the situation. Raman has also criticized the Government for its failure to recognize the contributions of Indian scientists to the world of science.

JOURNEY INTO LIGHT - Life and Science of C.V. Raman

The book is a biography of Raman dealing with his colourful life as well as his scientific work. Commissioned jointly by the Indian National Science Academy and the Indian Academy of Sciences in connection with Raman's birth centenary, the book will be formally released during the Centenary Celebrations in November 1988.

The name of Raman is familiar to the world of science not only through the effect which bears his name, but also owing to the names of derivatives such as stimulated Raman scattering and the Raman laser. But little else is generally known about the man himself other than that he won the Nobel Prize and that he was always to be seen wearing a turban!

Raman was born when the Raj was at its peak. However, India was in a suppressed and subdued

state, with opportunities for the pursuit of science practically non-existent. Thus Raman had to settle for an administrative career, although he displayed an unusual talent for physics even while in college. Arriving in Calcutta in 1907 to serve as the Assistant Accountant-General, Raman chanced to discover the Indian Association for the Cultivation of Science, founded some thirty years earlier on the model of the Royal Institution in London. But the Association was far from active. Raman promptly became a life member and, working in his spare time, built up a reputation both for himself and for the Association, conducting research mainly on vibration and acoustics.

In 1917 Raman gave up the lucrative Government job to become the Palit Professor of Physics and soon, with contributions from Saha and Bose, made Calcutta a place renowned for physics. It was during this period that Raman's interest shifted to optics, an interest that became life-long. The climax came in 1928 with the discovery of the Raman effect but in its wake also came jealousy and discord.

In 1933 Raman moved to Bangalore to assume the Directorship of the Indian Institute of Science, the first Indian to do so. Seized with an ambition to transform it into a world-renowned centre of excellence, he initiated several reforms, all of which boomeranged. Forced to resign the Directorship, he remained in the Institute as a Professor and, owing to shortage of resources, pursued the study of the optics of heterogeneous media although his heart was in nuclear physics.

In 1948 Raman retired to found his own institute. Active in research till the end, he studied mainly crystal optics, the colour of flowers and the physiology of vision. Fiercely cherishing his independence, he rejected all Government support as well as positions of authority. A sharp critic of many Government policies, he was much misunderstood and often maligned. Only now are his roles as a conscience-keeper for science and in the building up of the base of Indian science becoming evident.

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