

Investigations of the scattering of light

Prof. C G Darwin, in his interesting account in *Nature* of October 20, 1928 (p. 630), makes a reference to recent work on the scattering of light. It appears desirable in this connexion to point out that the existence in the light scattered by liquids and solids of radiations of modified wavelength was established so early as 1923 by investigations made at Calcutta. Dr K R Ramanathan showed (*Proc. Indian Assoc. Cultiv. Sci.* 1923, 8, p. 190) that when violet rays pass through carefully purified water or alcohol there is an appreciable quantity of radiations in the green region of the spectrum present in the scattered light. Further studies of the effect in other substances are described by Mr K S Krishnan in the *Philos. Mag.* in October 1925 and by me in *J. Opt. Soc. Am.* in October 1927. These investigations were of course well known to workers in this field.

In a lecture delivered at Bangalore on March 16, 1928, and published and distributed on March 31, investigations were described showing *first*, the universality of the effect, namely, that it is observed in the widest variety of physical conditions (gas, vapour, liquid, crystal or amorphous solid) and in the largest possible variety of chemical individuals (more than eighty different substances); *secondly*, that the modified radiation is strongly polarised and is thus a true scattering effect; *thirdly*, that each incident radiation produces a different set of modified scattered radiations; *fourthly*, that the scattered radiations consist in many cases of fairly sharp lines in displaced positions; and *fifthly*, that the frequency differences between the incident and scattered radiations represent the absorption frequencies of the medium. These observations established and emphasised the fundamental character of the phenomenon in a manner which any isolated observation with a single substance would have quite failed to achieve.

The Russian physicists, to whose observation on the effect in quartz Prof. Darwin refers, made their first communication on the subject after the publication of the notes in *Nature* of March 31 and April 21. Their paper appeared in print after *sixteen* other printed papers on the effect, by various authors, had appeared in recognised scientific periodicals.

C V RAMAN

210 Bowbazaar Street, Calcutta
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