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Rotation of molecules induced by light

In an earlier note to *Nature* (August 25, p. 278) we ventured to suggest that the nebulosity or wings which accompany the original lines of the mercury arc after scattering in benzene liquid, are the effect of those collisions of the incident light-quanta with the molecules which result in a change of their rotational state. At the present time we are not very clear as to the conditions under which a spin may be set up in the molecule when it collides with a light-quantum. It appears, however, reasonable to suppose that the probability of such spin being induced should depend, among other factors, on the degree of optical anisotropy of the molecule.

In agreement with this supposition it is found that while the aromatic compounds such as benzene, toluene, pyridine, etc. which have a strong optical anisotropy, exhibit the wings of the scattered lines in a striking manner, the aliphatic compounds such as carbon tetrachloride, ether, alcohol, etc. which are much more nearly isotropic optically, exhibit the effect only very feebly. A further confirmation of this idea is furnished by photographs of the scattered spectrum from carbon disulphide taken by Mr P V Krishnamurthy in our laboratory.

It is well known that the carbon disulphide molecule has a high degree of optical anisotropy. The photographs show, as expected, besides some displaced lines, also strong wings accompanying the original lines of the mercury arc. Incidentally, we may mention that the wings appear to consist of unpolarised light.

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