

35.
Explana-
tion of
fluorescence.

amination into the question how vibrations of the luminiferous medium can be mechanically transferred to the compound molecules of a transparent body, and retransferred again to those of the ether itself—*i.e.*, the question of the absorption and emission of light. He showed that vibrations of a certain period, corresponding to a definite tint of colour, could eventually give rise to vibrations of altered period in the emitted light; that this period, however, must always be longer—*i.e.*, that the new colour must always be of a lower order in the scale of refrangibility. He was thus not only able to explain mechanically the peculiar luminosity which he termed fluorescence,¹ and which had been observed by Herschel and Brewster in certain minerals and solutions, and independently studied by E. Becquerel in France, but he also showed how, by means of such substances, rays of light which, owing to the frequency of their vibrations, transcend the perceptive powers of the human eye, can be made visible by giving rise to secondary waves of less frequency. The line of reason-

¹ The term fluorescence was coined by Sir G. Stokes by analogy with opalescence as involving no theoretical suggestion, in place of the earlier names of "internal dispersion" or "epipolised light" used by Brewster and Herschel. He, however, very soon favoured the term "degraded light," suggested by William Thomson (Lord Kelvin) (see the second memoir, 1853, p. 387). The latter was at that time occupied with his celebrated and not less epoch-making researches referring to the dissipation or degradation of energy, of which more in the next chapter. If we remember that fifty years ago

the term radiation was not yet generally used to embrace the invisible chemical (ultra-violet) and caloric (infra-red) rays; that photography, which more than any other process has familiarised us with chemical radiation, was a comparatively recent invention; that the ideas of conservation, conversion, and degradation of energy were quite new; that the general term energy had not even been invented,—we must indeed regard the words of Sir G. Stokes as containing a prophetic programme of the ideas and problems of the whole subsequent period down to quite recent times.