tween a lens of light crown, and a plate of heavy flint-glass. In this case the reflexions from the two surfaces are performed either *both* from a denser medium upon a rarer, or *both* from a rarer on a denser according as one or the other glass is uppermost. In the former case *two* semi-(or one entire) undulation will be gained or lost between the reflected rays at emergence, in addition to the entire ones lost *between* the glasses: in the latter none. At the central spot, then, the two reflected rays will start on their backward course in exact harmony, and the spot will be white, not black; and a similar reversal of character will of course pervade the whole series of rings. This result, predicted by theory, has been found confirmed by experiment.

(92.) It was a favourite idea of Newton that the colours of all natural bodies are in fact the colours of thin pellucid particles of such sizes and thicknesses as to reflect those tints which, in the scale of tints of the coloured rings above described, most nearly correspond to them. This idea we know now to be untenable, if for no other reason than that we are sure the ultimate particles or indivisible atoms of bodies (if any such there be), are at all events many hundreds, thousands, or millions of times smaller than even a single wave-length of any homogeneous ray of light. It will, of course, be asked how we know these wave-lengths. And this we must now explain: in doing which we shall have to develop the most astounding facts in the way of numerical statement which physical science has yet revealed.

(93.) In a series of equal waves running along still