Two century from the revival of the undulatory theory of light
(Thomas Young and the first explanation of the
supernumerary bows)

F.S. ULIU

Department of Physics I, University of Craiova,
Str. A. I. Cuza 13, Craiova-1100, Romania

ABSTRACT

The main idea of this paper on the history of physics is that, as a guide to the future, it is very important to understand the past. Its wish is to remind a remarkable event which happened two centuries ago, and by which the fate of Optics was changed: it was the rebirth of the wave theory of light, after a hundred years of absolute predominance of the Newtonian corpuscular theory. The beginnings of this New Era in Optics are related to the name of Thomas Young, on whom Hermann Hemholtz has said that "he was one of the most profound minds that world has ever seen...". To illustrate his "principle of interference", Young explained the formation of colored bands in soap films, Newton's rings and the so-called "supernumerary arcs" that Descartes' and Newton's theories of rainbows had not yet explained. Since usual textbooks and treatises on Optics do not look upon this last theme, in our paper the matter of "spurious bows" will be investigated in some detail from quantitative point of view. At the end of the work, a sketch is drawn, of the way by which, in the years 1836-1838, relying on Young's ideas, another important scientist-George Biddell Airy, elaborated the first complete version of the wave (diffractive) theory of rainbow.

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