

which we have spoken) continued to occur for a considerable length of the ray. But other persons, attempting to repeat his experiments, confounded with them extraneous phenomena of other kinds; as the Duc de Chaulnes, who spread muslin before his mirror,<sup>6</sup> and Dr. Herschel, who scattered hair-powder before his.<sup>7</sup> The colors produced by the muslin were those belonging to shadows of *gratings*, afterwards examined more successfully by Fraunhofer, when in possession of the theory. We may mention here also the colors which appear on finely-striated surfaces, and on mother-of-pearl, feathers, and similar substances. These had been examined by various persons (as Boyle, Mazeas, Lord Brougham), but could still, at this period, be only looked upon as insulated and lawless facts.

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## CHAPTER IX.

### DISCOVERY OF THE LAWS OF PHENOMENA OF DIPOLARIZED LIGHT.

BESIDES the above-mentioned perplexing cases of colors produced by common light, cases of *periodical colors produced by polarized light* began to be discovered, and soon became numerous. In August, 1811, M. Arago communicated to the Institute of France an account of colors seen by passing polarized light through mica, and *analysing*<sup>1</sup> it with a prism of Iceland spar. It is remarkable that the light which produced the colors in this case was the light polarized by the sky, a cause of polarization not previously known. The effect which the mica thus produced was termed *depolarization*;—not a very happy term, since the effect is not the destruction of the polarization, but the combination of a new polarizing influence with the former. The word *dipolarization*, which has since been proposed, is a much more appropriate expression. Several other curious phenomena of the same kind were observed in quartz, and in flint-glass. M. Arago was not able to reduce these phenomena to laws, but he had a full conviction of their value, and ventures to class them with the great steps in

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<sup>6</sup> *Ac. Par.* 1755.

<sup>7</sup> *Phil. Trans.* 1807.

<sup>1</sup> The prism of Iceland spar produces the colors by separating the transmitted rays according to the laws of double refraction. Hence it is said to *analyse* the light.