These rays coming different distances, produce on the plates, alternate rays of light and darkness. If instead of a homogeneous ray, white light is experimented with, the colors of the spectrum are generally produced. This is due to the compound nature of white light, which will be explained presently. Examples of this are of daily experience. The brilliant iridescent hues of a thin soap-bubble, the prismatic colors which oil displays when thinly spread over water, and the chromatic display, observed on Burton's buttons, mother of pearl, and the surface of tempered steel are all instances of this phenomenon of interference.

Taking the undulatory theory as a foundation, the explanation of many facts concerning light is very interesting. Newton discovered that solar light is composed not of a single vibration, but rather of seven distinct sets each of which correspond to a special color, which uniting form white light. By allowing a sunbeam to pass through a prism, he divided it into seven primary or prismatic colors. Nature furnishes an example of this in the beautiful phenomenon of the rainbow, where the vapours of the clouds form the prism. Newton recomposed white light from these seven colors by a very simple but ingenious experiment. A disc upon which these colors were painted was made to revolve rapidly. In this manner, the colors were superposed upon the retina and the disc appears white. From these observations Newton proposed the explanation of colors now accepted by scientists. White bodies are those which reflect all the colors of the spectrum in their proper order, while those that appear black absorb or extinguish them all. Between those extremes there arises an infinite variety of colors according to the number of primary colors reflected or absorbed.

It must not be supposed, however, that this light is all reflected as is the case with certain highly polished surfaces known as perfect mirrors, which reflecting all the rays which fall upon them are themselves invisible. A body becomes visible by irregular reflection, that is by the rays being reflected in many directions on account of the roughness of the surface. A familiar example of this can be easily given. From the surface of a still pond the surrounding scenery is reflected and the clouds and the sky are beautifully portrayed beneath the surface. A light gust of wind covering the surface with ripples, obliterates all this, and the water alone is visible.

So far, we have shown the application of the undulatory theory to many facts; but the question might here arise: "are there any phenomena that it fails to explain?" To this it can be answered that though it perfectly satisfies the requirements of science in facts so far known, yet, if it be the true theory, certain phenomena, as polaristation shows, that these undulations of the ether are of a nature more complicated and intricate than can be represented by the ordinary motions of air or water. It is thus evident that inspite of the great advancement which has been made in science, there still remains much to be learned, and it is difficult to say what the future has in store for us, or what new ideas will occupy the minds of men in times to come.

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