

COMMENTS ON MORALES' PAPER "NEW VIEWPOINTS ON THE REFRACTION OF LIGHT"

by: The Editor.

Despite the recent change of policy of this Journal not to add footnotes to author's papers deflating their ideas and spoiling their joy in circulating reprints, the comment made by Born quoted by Morales in §2 was so bad, we just had to flag it. It is one so typical of the confused and shallow thinking of the relativistic persuasion of science that it needs to be exposed openly. The other fallacies of that undiscipline have so confused the thought processes of its devotees that now the most obvious of faulty reasonings can no longer be detected by them, so that they parrot sophisms of the most heinous sort routinely, such as is the instance here.

Of Morales' paper itself, the comments are few. He proposes that light of all colors, that is to say, wavelengths, travels through a transmitting medium at a speed characteristic of the medium and independent of the wavelength. We are, of course, not averse to considering such a proposition which would explain why light from stars of different wavelengths always arrives at Earth synchronously. We have often wondered if it might not actually be true.

There are two definitions for refractive index. The first relates the angle of incidence to the angle of refraction. This is a practical definition that the experimenter would use who is actually making such measurements. According to observations made, it turns out that red light is differently bent to blue light; at least, so we are told by others who presumably have made the necessary measurements some centuries ago. If reliance can be put in those reports - we cannot vouch for them from our own personal awareness - then there is no possibility that Morales' hypothesis can be correct. The facts belie it.

The second definition, the one Morales considers, relates the refractive index to a presumed relationship between the velocity of light in two different media. It may be possible that this ratio is constant as Morales would persuade us it is, for it does not appear that actual measurements of velocities were ever made. We know of none, at least, though it is a simple matter to make such measurements with today's technology. It was not 50 years ago, and the measurement through air was all that was done. That was quite an achievement for the epoch when Fizeau undertook it. So far as direct measurement through water, for instance, it was too difficult an undertaking then. Since then, the question has been let slip by and the necessary verification or deverification has not been made. In particular, it has not been proven directly that light of different colors does or does not propagate at different speeds.

Under the Huyghens theory, the two definitions are equivalent. If that theory be true, there is no possibility that Morales' proposition is meaningful. For it to be meaningful, the Huyghens principle must be dropped. Under some other principle, then, the two definitions separate and Morales' formula (6) could hold, while the ratio between sines of the angles of incidence and refraction would vary with the color.

Thus, it is impossible to prove what Morales asserts, using the Huyghens wavelet-envelope theory as he attempts. His arguments are fallacious.

It is no demonstration, either, to believe that because an efferent wave from a medium assumes the same direction as the inferent wave to the medium, that, therefore, an unrelated proposition has been proven, or that it has the potential of being so proven.