OPTICS. — The Fresnel law of ether entrainment. Note from M. C. RAVEAU.

My opinion is quite the opposite to that of Mr. Menges ([1]). I think the Fresnel formula is unassailable and that it is demonstrably independent of any relativity of time and space. This is what I think I have given evidence in a previous note ([2]). I will propose here an alternative proof, less symmetrical, but a bit simpler.

Let there be an interference device positioned to measure indices. Between two parallel planes A, B, and normal to these plans, a ray goes through a medium of index *n*. The second ray, parallel to the first moves in a vacuum, since the plane of A to a plane mirror C, located beyond B; reflected on himself, is returned to B. When the device is set, it was

$$n\mathrm{AB} = \mathrm{AC} + \mathrm{CB}; \quad \mathrm{AC} = \frac{n+1}{2}\mathrm{AB}, \quad \mathrm{CB} = \frac{n-1}{2}\mathrm{AB}.$$

The setting course is maintained, regardless of the speed φ given to the device along with interfering rays. Conservation of equal length on both paths, measured by an observer who sees the device move and take the middle one apparent index *n'*, imposes the condition

$$\frac{n'}{1-\frac{\varphi n'}{c}} = \frac{n+1}{2\left(1-\frac{\varphi}{c}\right)} + \frac{n-1}{2\left(1+\frac{\varphi}{c}\right)},$$

which is other than of Fresnel.

([1]) See *Comptes Rendus*, vol. 175, 1922, p. 574

([2]) *Comptes Rendus*, vol. 175, 1922, p. 613