CORRESPONDENCE.

THE RELATIVITY OF MASS.

To the Editor of THE AËRONAUTICAL JOURNAL.

SIR,—I have read the article on the above in THE AËRONAUTICAL JOURNAL for September with much interest, but cannot make out what precise system of relativity is used in treating the cases referred to on p. 283. As I explain later on, there are some more or less arbitrary features in such systems. On the ordinary system of supposing the mass not to vary at all, it would be reckoned that, quite regardless of the points of the compass towards which their motions were directed, two equally loaded trucks running at 20 miles an hour would have twice the kinetic energy of one, and take twice as much work to be started from rest and brought up to speed as one. In the article referred to, however, what I should call the difference of the squares of $v+u$ and $v-u$ is taken instead of the sum, about halfway down p. 283, when $v-u$ is in the opposite direction to $v+u$, as if points of the compass were taken account of, contrary to the ordinary rule. Hence I conclude that some special relativity system is used here. Moreover, the velocities relative to the earth of D and G are put down as $v+u$ and $v-u$ respectively, whereas (taking the slope of the inclined planes to be at an angle θ) these would, on the usual system, be $\sqrt{(v^2+u^2+2uv\cos\theta)}$ and $\sqrt{(v^2+u^2-2uv\cos\theta)}$, which somewhat confirms the special system hypothesis, though these, and other discrepancies, could be avoided by altering the conditions slightly. Anyone has a perfect right to assume any self-consistent laws of relative mass he pleases, and to deduce the consequences. There is no difficulty in assuming that a body A has a mass M when it is moving in a given direction at a given velocity V relatively to a body B, and that A's mass will be altered to m, differing from M, if it move at a velocity v, differing from V, along a line (defined by an angle θ), differing from the given line. But it is not possible to discuss the consequences unless a rule be furnished to find m when M, V, v, and θ are known. No rule of this sort being stated in the article, and finding some difficulty in devising one that fits the statements of consequences in the article, I can only hope the author will state the rule himself.

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