

420

Dawson, Edgar R.
1890

"The Spencer Discussion as to Reversed Velocities,"
The New York Times, vol. 39 (Sunday, 20 April),
page 13, column 1.

THE SPENCER DISCUSSION

AS TO "REVERSED VELOCITIES."

SOME ILLUSTRATIONS OF "OUTSIDER'S"
HYPOTHESIS OF A UNIVERSE MOVING
BACKWARD.

To the Editor of the New-York Times:

"Outsider" complains that I catechise him severely, that my questions are drastic. It is, indeed, a surprise that he should object to this system of catechising when he so largely employed it himself. "O wad some power the giftie gie us, to see oursel's as others see us." We are informed that an attack on Mr. Spencer is not intended, but that he is impelled by a desire for information merely. But in the next breath he patronizingly pats his instructor, Prof. Osborne, on the back and tells him that he fully understands the essence of Spencerianism. Although occupying the exalted position of one who finds Mr. Spencer's conception of evolution clumsy, which Prof. Huxley has characterized as the only complete and systematic statement of the theory with which he is acquainted, we must not consider him an enemy of Mr. Spencer, but

"An infant crying in the night, an infant crying for the light, and with no language but a cry."

In his adaptability to circumstances, "Outsider" is not unlike old Polonius, who could see a camel, a weasel, or a whale as it suited his fancy. One of the chief difficulties that he seems to encounter is that Mr. Spencer does not explain everything, and demands some propositions as necessary truths. His words are: "I am disinclined to admit any proposition as absolutely necessary. I would not absolutely require philosophy to start with nothing, though some systems do this, but I should think it very hazardous to commence with a hard and fast set of 'first principles.'" It is hard to understand how one could say this, were he not arguing with the approximation of Mr. Spencer's system to "halting imbecility" as an axiom. To say that Mr. Spencer starts with a set of "first principles" as necessary truths is a fundamental misstatement. It is unpleasant to be

forced to so flat a contradiction, but no other answer is left. And it is hardly necessary to state that Mr. Spencer claims to establish his First Principles and not to start with them. On page 157 of "First Principles" Mr. Spencer briefly makes known his postulates, and to these I respectfully refer "Outsider." There is a charming indefiniteness about what "Outsider" would "require" of philosophy in general and Mr. Spencer in particular, and I cannot resist asking whether he is willing to concede the validity of impressions as a necessary truth. The force of his "likelier way of arriving at truth" is not apparent, since Mr. Spencer has not laid an embargo on our keeping our eyes and ears open. It is, indeed, mournful to find out that one has the blind staggers in a coal sack, and it is not even hinted that there is any coal in the sack, either—after such a mild Winter, too. In case "Outsider" believes that he has exhausted our supply of fuel, and that our complete state of integration will be immediately followed by a disastrous dissolution, I beg leave to remind him

"Pendant que nous faisons la guerre,
Le soleil a fait le printemps."

I know of one mathematician who defines space as "indefinite extension, finite portions of which may be measured." But he says that the best idea of it is gained by experience. As to space being continuous, we have Newton's definition of continuous as "joined together without the intervention of any space."

In the problem of the motion of all particles with their directions reversed, let us first take "Outsider's" illustration of the wire and electric current. When the current starts from New-York to Philadelphia, it is undoubtedly because there is a lower resistance at the Philadelphia end of the wire than at the New-York end. But, now, suppose we conceive this current to be suddenly changed in direction, would its continuance in this opposite direction be insured against a greater resistance at the New-York than at the Philadelphia end? It is to be remembered that we are only allowed the privilege of changing the direction of the motion with the initial velocity after the change the same as the final velocity before the change; all the other conditions are to remain the same. It seems to me that this would negative the law of the conservation of energy. In order to simplify the problem, let us take the case of a steam engine running at a uniform rate of speed and in which steam is admitted full stroke. In so doing, we will have something much more tangible than an electric current to deal with. When, according to our hypothesis, the motion of the piston is reversed, the steam must be forced back out of the cylinder into the boiler by means of the momentum of the flywheel and other moving parts. If that much is accomplished, it would be doing well, but what of the next stroke? Why, all the particles of steam that have been exhausted and become water again will have to find their way back into the cylinder, and in turn be forced into the boiler. As these particles of steam in leaving the cylinder followed the lines of least resistance, they will have to follow the opposite lines in going back. I use the term line of greatest resistance in the sense of the correlative of "line of least resistance," meaning the direction exactly opposite. The line of greatest resistance and the opposite of the line of least resistance do not always coincide. I purposely

took a case in which there was supposed a uniform rate of speed in order to meet an objection that may be urged—namely, that in the case of a body moving at a uniform rate of speed there is a sort of running balance established, and the resistance is equal to the propelling force. This is, however, only in a measure true, as the resistance must be infinitesimally smaller than the propelling force, or we shall have no motion. In case it is now urged that this would subject the body to an accelerated motion, which is contrary to our hypothesis, the reply is, that as absolute uniformity of motion is contrary to the rythm of motion and impossible of realization, the original motion is to be considered as uniform as is possible. Suppose we make it more general still, and take the case of an evolving aggregate in a gaseous state, which is concentrating with a loss of its heat or contained motion. Now, when we reverse this process, what is there in the nature of things to keep up this reversed operation? We have not changed the attraction of the particles for one another, and to keep up these reversed motions they would have to overcome this attraction, with no qualification for so doing, after they have exhausted the motive that was imparted to them with the reversal. What course is left open to them if required to keep on except to follow the lines of greatest resistance?

The question that "Outsider" puts about the egg and the bird, being surprised that birds never grow back to eggs, is indeed calculated to startle us. The difficulty will be an apparent one only, I think, when the immense amount of motion that is imparted to the egg in the form of heat is considered.

EDGAR R. DAWSON.

BALTIMORE, Monday, April 14, 1890.