



## A consideration regarding the proper motion of the sun in space

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extent broken up into detached propositions, yet he states that in his opinion "this is not the form in which such a treatise ought to be written" (pp. vi, vii). And with reference to the chapter of "General Theorems," he says that several of the results proved in it "have already occurred as immediate deductions from the laws of motion; but to maintain the special character of the work we give more formal analytical demonstrations, though these are certainly superfluous" (p. 259). We cannot help thinking that the unintelligible examples should have been omitted, and that the book should have been written in the form that seemed best to the writer. But if this could not be, and he were in any sense writing to order and so obliged to compromise, surely it is somewhat ungracious to proclaim his dissent, from what is after all his own act and deed, upon the house-tops. The fact is, if we may venture to hint at a fault, the Professor's individuality is a little too pronounced. If he thought it best, on the whole, not to act upon his private opinion, it would have been better to have kept silence. Occasionally the fault takes another form, and he indulges in some thing that might almost be called autobiography. A very curious instance of this is to be found in the confession that, when he wrote the second chapter as it stood in the First Edition, he had not so much as read "Newton's admirable introduction to the *Principia*."

## LII. Intelligence and Miscellaneous Articles.

A CONSIDERATION REGARDING THE PROPER MOTION OF THE SUN  
IN SPACE. BY S. TOLVER PRESTON.

IT is a known fact that a wave emitted in a medium does not partake of the motion of the body emitting it; for when once the wave has left the body, the wave depends solely on the medium for its propagation. Hence it would follow that, owing to the sun's proper motion in space, the waves emitted by the sun must be situated *excentrically* about it, the degree of excentricity marking exactly the direction and velocity of the sun's proper motion in space (or in the æther which fills all space). It thereby becomes possible (in imagination at least) to refer the proper motions of the sun and stars to one common standard, viz. to the universally diffused æther: or it may be said that the direction and velocity of the sun's proper motion (and that of every star) is physically *marked* in the æther of space—each stellar sun marking the direction and velocity of its motion with geometrical accuracy by means of the relative situation to one another of the spherical waves successively emitted, each of which remains immovable or unalterable in position (in regard to its own centre). In short the centre of a spherical wave may be said to represent *indestructible position*, in the sense that the centre of the spherical wave is an immovably fixed point, such that the intersection of the normals to two tangent planes situated anywhere on the contour of the spherical wave

always marks the same indestructible locality (which is entirely unaffected by any subsequent motion of the body which emitted the wave). In this sense it may be said to be theoretically true that the locus or origin of any disturbance in a medium is for ever defined in that medium.

If we imagine a boat sailing in a smooth lake, and drop periodically stones into the water, circular waves will spread each time from the centre of disturbance, and the degree of excentricity of these waves to the moving boat (or to each other) will mark geometrically the direction and velocity of the boat's motion. So the degree of excentricity of the waves about the moving sun (set up by the disturbing impulses of its molecules) marks geometrically the direction and velocity of the sun's proper motion.

The following point in connexion with this subject may perhaps be worth a passing notice. It has been computed (according to an estimate of Sir William Thomson, based on the observations of Herschel and Pouillet), that the energy of the waves given off by the sun amounts (in round numbers) to 7000 horse-power per square foot of surface; or, otherwise, about 1700 foot-tons of energy are thrown off per second from every square foot of the sun's surface into the æther of space. It would seem incredible (whatever the constitution of the æther might be imagined to be) that all this energy could be given off to a material medium in a particular direction (*i. e.* in a direction *from* the sun) without any reaction in the opposite direction: or would it be supposed that, if the sun were emitting all this energy from *one side only*, there would be no reaction in the opposite direction? Admitting that there would be a certain reaction in this assumed case, then it would be reasonable to conclude that, as the case actually stands, the reaction would not be *perfectly* balanced, owing to accidental irregularities in the distribution of the differently radiating materials of the sun's surface. If this be admitted as possible, then we should have in the unbalanced reaction a true physical cause for producing (or influencing) the proper motion of the sun.

London, October, 1878.

#### ON THE DISSOCIATION OF THE OXIDES OF THE PLATINUM GROUP.

BY H. SAINTE-CLAIRE DEVILLE AND H. DEBRAY.

Platinum is distinguished from all the metals with which it is associated in its ores by the fact that it does not combine directly with oxygen, in whatever position we place the two bodies.

With rhodium, palladium, and iridium the case is different. When heated in a muffle, if the temperature is not too high, these metals combine with oxygen; but their oxides are decomposed when we raise the temperature sufficiently.

Osmium and ruthenium combine directly with oxygen. The product of this oxidation is volatile, and is formed at the highest temperatures.