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Bradley View, Newton Abbot,
Sep 24. 98

Dear ~~Father~~ Fitzgerald,

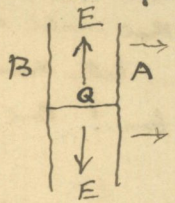
Do not talk of trouble. I sh^d have been glad to have had the trouble and pleasure of supporting you for a length of time, not in a state of luxury exactly, but at any rate in a manner that would ensure you against starving. For example, I could give you something better than a thing called a chop,—one inch of meat and 8 inches of bone! But no doubt you would find the Hotel more comfortable.

In spite of the secretive manner in which you entered and left this town, you did not escape notice, either on your arrival at the railway bridge in the morning, or your departure up the hill in the evening. Who did the —— go out with? Was it his father? Was that the old man's bike standing outside?" Certainly the student, lot of impertinent prying people that I ever had the misfortune to live near. They talk the language of the sewer, & seem to glory in it. You would be astounded if I were to go into detail about the way they have baited me. But I have not the least doubt of some hanky panky behind it.

There is not, so far as I know, anything strictly analogous to the electromagnetic stress, to be found in the usual representations of the motions of fluids or solids. You may assume any constitution you like for the ether, in bulk; then you will get a definite ordinary stress, and the electromagnetic stress. It is then like an impressed stress. After all, you may regard it as the equivalent of the impressed moving forces. And this applies to the so called pressure of radiation. Lodge says Lord K. does not believe in it a bit. Well, he needn't, but he can't get rid of its consideration in some form or other. It is exactly equivalent to the moving force on electric current etc etc. If J.J.T. says there is no pressure on a reflector, that won't do. The reflector will destroy $\underline{E}$, but with double $\underline{H}$; so there you are. Under all cases. the forces on a body immersed in the ether is equivalent to the pull or push of the Maxwellian stress just outside it. Lord R. and J.J.T. lately have been rather

at all about this. I have shown that any stress may be ~~addressed~~ in the body itself, without altering the forcive (resultant). The difference will come in in the strains produced.

As regards Action & Reaction, that is all right in the abstract theory. Take case of plane wave, and a charge; the wave having electrification also. There is moving force on Q, there is none on q. But the reverse equivalent of the no moving force on q is the fact that there is no moving force in the total, on the plane wave, or rather on the matter carrying the parts of it which separately produce (on distance action idea) electric force at q. There are the two magnetic currents on A and B, and the electrification Q. The sum total of their E's is the actual E of the plane wave, only existent between A and B. But you may well ask what the moving force of q on A and B does. As regards Q we think of matter moving or slipping through the ether. There is no reason to doubt that the motion would be altered by the presence of q. If you regard the ether as having a substantial existence, then q exerts an impressed moving force on the substantial ether momentarily occupied by the wave front & back. What happens depends on the nature of the ether, and it may readily alter the manner of transit of the wave in some small degree.



In dynamics I am a Newtonian, until something better turns up. I fancy that Newton will stand.

Yours sincerely
Oliver Heaviside

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