24/49

ST JOHN'S COLLEGE,
CAMBRIDGE.

Ap 25. 1898

Dear Fitzgerald

I am not ready to admit that your very elegant illustrative analysis in Roy. Soc. Proc. LXIII p 33 settles the connexion between the Zeeman & Faraday effects. I still hold, as in a note to Lodge's Roy. Soc. account, that they are not direct converses one of the other. The law of magneto-optic dispersion you arrive at

all wrong

~~depends~~ on $\frac{1}{\lambda}$, instead of $\frac{1}{\lambda^2}$ as it ought, and must be in accordance with the observations of

energy as I explained in Leathem's paper § 5 and long ago in Brit. Assoc. Report.

When I was working at the matter I made out the main origin of the Faraday effect to be a precessional sort of rotation, or wobbling, of the elliptic orbit by an alternating magnetic force in its plane, and practically not at all a Zeeman change of period. I also made out the analogue of the Lorentz $\frac{\mu^2-1}{\mu^2+2}$ / density law for magneto-optics, and proved that nothing like that or anything else is actually true. I observe that Lorentz has been at the same position since then. I believe the whole affair is highly complex and dispersion in all ways.

Yours very sincerely

Larmor

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