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April 30th 1899

Dear Professor Fitzgerald,

Your letter has filled me with compunction, at the realization that I have been thrusting my own affairs upon you when you are already so overburdened with your own work. I should have known better, but I was very anxious to have your criticism before publishing, and can only hope that you will not bother about the matter till you have a clear field and lots of leisure. I have just come in from a sympos-

I read also your note of diffusion. Do you know if it has ever occurred to any one to determine the mechanical equivalent directly by fixing a tube full of Ag nitrate solution to the Eiffel to ~~the~~ tower, putting plates of silver at the top & bottom, & measuring the difference of voltage between them?

I trust that your family will soon be well, & that if you find yourself too much engaged you will not hesitate to slip my paper off to some of the technical journals, like the Electrician, I remain,

Sincerely & Respectfully, you

Reginald A. Fessenden

P.S. I find that I have made a slip in calculating out the intensity of gravitational force on the sun, & hence my statement about the ether having to be under pressure is wrong.

papers with Hastings (of Yale), Wash-
worth, the Paris metre man, F. J. J. J. J. J.
Brashear. (we miss Keeler now, since he has gone
to Sicily). The talk was on optics, and of
course, brought up at last to the wave of
compression, and here are some questions
which arise.

1st Granting that the determination of
the density of the ether as 0.0000001 is cor-
-rect, does not this make the ampli-
-tude of vibration so small that the
energy stored up in the longitudinal
compression is infinitely small com-
-pared with that in the transverse
strain, & it would seem, to me, that
the smaller the amplitude of ratio of
the amplitude to the wave length,
the smaller the energy stored up
in the compression wave, and on

any theory, the amplitude of light waves
is only 10^{-8} as much as that assumed
by Lord Kelvin. (Trans. R.S. Soc. 44, 60)

2. If the ether has a duplex nature, do
we need any compression wave what-
-ever?

Possibly some of these questions have been
answered before, but I could not recollect
it; & I am hoping to see you or Lord
Kelvin publish your conclusions on the
matter, as I understood from your
last letter that you ^{were} ~~had~~ taking up the
question of the compression wave.

I was much interested in your
note to Nature. I hope the experiment
will be tried, or rather, that it will
be successful, as I remember that
you have already started the exper-
-iment.

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