

though at the ^{other} ~~same~~ times by imaging
occasionally pressure to be a form of energy
he gets into a fog.

Hyd. Pressure is the analogue of E . tension $2\sigma p^2$
& not of potential at all.

However he & Ayrton seem to have thought
out the matter very carefully & no doubt
their views are consistent with themselves.

I am very glad you have come over to
my side at my note - though I expect
you won't admit that you have. I don't
mean you have been converted, but I mean
that we are only superficially & apparently disagreed.
You do not now surely adhere to your static
diagram at the meeting.

It is very interesting to see how on my hypothesis Poynting lines
in the air radiate from the Zn Cu junction, though
all really start from the

2/7

~~UNIVERSITY COLLEGE,~~
~~LIVERPOOL.~~

Trefriin
N. Wales

9. April 85

Oliver Lodge

Yours very sincerely

Zinc air or zinc liquid

My dear FitzGerald

Your letter of 2nd expresses
just my own views. Any differences
of potential which can exist between 2 conductors
must be due to an EMF between them
& this must exhibit itself in that Peltier
or other energy phenomena whenever E .
is sent either way across the junction.

It may quite well happen that
the potential of vacuum near a metal (say
a vacuum cavity) shall be different from

The potential of the metal, though it
has never ^{yet} been proved, ^{to be different} but whether
it is or not that does not affect
the matter under discussion
provided always, ^{that} by "the potential of
a ~~the~~ metal" we mean the potential of
the metal & not the potential of
something else - air or vacuum
for instance - near it.

Thomson no doubt had historically got used
to a definition of work done in bringing ϵ

near a body & had forgotten to alter
it, and that is all that is the matter
with him.

Perry however is in a more serious
mess being very queer indeed in his
hydraulics. A bold thing to say but
it seems to me a true one.

If by potential we don't mean
pot energy of unit mass then it is
only a question of terms & the sooner they
are agreed to the better. But Perry has
been kind enough to lend me the M.S.
of what he intends to say & he often
does evidently use potential in the customary sense

2/7

~~but~~ became all Electrical
from waves + E one way
& - E the other.


But then I fancied that
light was not bodily
undulations of the ether (the
ordinary theory) but was
periodic electrical displacements

viz + up & - down
the restoring force being ^{due to} the
electrostatic strain instead of

ordinary elasticity. And hence

I imagined that light might
be excited electrically.

Very likely I am all wrong.

^{even if light is bodily ether waves}
But, suppose the + E were
made to oscillate  ~~about~~
rotationally & the - E
to do the ^{same period} same, but with always
opposite phase. Then the
2 circular motions would
compound into a plane vibration:
that is ~~of~~ the whole ether would oscillate

up & down by reason of
the ^{rotating} electromagnetic oscillations.

Probably this is nonsense.

Yours very sincerely

J. J. Lodge

2/7

like & which is certainly ^{very} _^ ^{conceivable},
that Ether is + & - Electricity
together & that when an
EMF is applied the Ether
is sheared but not moved
bodily either one way or the
other seems to fit this &
to agree with what you say.

Hence if light is bodily
undulations of ether then we
can set it going electrically

I believe the simple discharge of a condenser makes it emit light of this sort; the discharge being oscillatory.

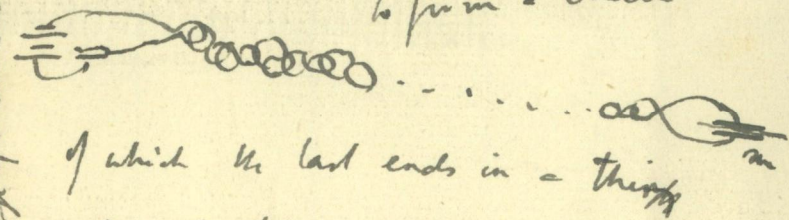
Another notion is this.

To generate E. magnetic light.

make 400×10^{12} ~~oscillations~~ electrical oscillations per sec.

and have 40 figures of 8 s of wire, & have a short coil & battery & fork interrupting the current 400 times per sec

Then arrange the fig of 8s to form a chain



of which the last ends in a thin mica condenser m.

You then get induced current of a high order. 400×2^n in the n circuit

& as $2^{40} = 10^{12}$ about 40 could do. The mica would emit light?!?!?

Yours insdly J Lodge

26. Feb. 80

17. Parkhurst Road N.

Answered

2/8

My dear FitzGerald

May I trouble you once more as you are good enough to answer my letters better & quicker than I answer yours.

If Electromagnetic disturbances travel with the vel^y of light not only in vacuo but in all media (as they ought to do if $K = \mu^2$) &c