

at South Kensington was too precarious, & it happens
to be occupied just now.

Remember that, though the Sine Elect^r. may fail to measure
the EMF of an active cell, it will certainly measure
much smaller EMF, than the Attracted Disc Elect.
I shall keep yr paper, & when I write a paper on
Sine Elect^r. & the measurements wh. I shall make
with it, I shall also refer to the first Elect^r.
& give your theory. Of course I knew that it did
4 times what Thomson's did. I said twice, because I
referred at the time to only two plates.

I shall defeat you at Racquets when you go to
Dublin. Pray arrive there a few days before your
appointed time, & I shall go over street car.
My work begins on 20th at Copper Hill.

Write about the point ^{in red.} M

Also saw obj^m to pile of plates.
Would you like one of the "Minchin Line Piles"?

10/86 \$

24th Dec.

On this dirty sheet of paper (the only one left here) I
congratulate you on getting yr. paper into the Phil.
Trans. By this time you have received the 2^d edⁿ
of my States. Is it not an imposing volume? I thank
Nature sincerely for having so arranged things as to keep
the Dublin Univ. Series authorities from adopting it!!!
It strikes me that the treatise is a rather complete
one, and that these gentlemen have made a mistake.
I withdraw my objection to Clerk Maxwell's pages.
I draw considerable consolation from the fact that
you only "do not think very much" about my Sine
Elect^r. — especially as the difficulties pointed out by
you are not very great. I saw after writing to
you that I was wrong about the stiffness of threads.
[By the way, you forgot that the disc is held up by
2 parallel threads, so that your objection about
twisting round is a trifling one]. The flushness
of the disc can always be secured by stretching
tightly across the plate a very thin platinum
wire with wh. the disc can be in contact in the
posⁿ of =. There is no question about altering the
distance between the plates by rotating them, because
(as the workmen who will probably make it for me
explained) the two plates can revolve round the same
axis, & their distance can be altered by means of a fine
screw working at back of one of them, their parallelism

being secured by four guides at their corners. [Of course it is not necessary that there should be metallic connection between the plates because they move round same axis]. A long pointer proceeds from one of the plates, & the rotation is measured on a divided scale with vernier.

The radiometer suspension of wh. I spoke in the last letter would do only in the case of repulsion, unless there were slits right through the guard plate. The unspun silk is the best thing. Its rigidity is absolutely nil.

But now here is a question which I want you to answer with despatch:

Is it necessary that throughout the whole of an experiment the disc [or well as guard plate] should be in metallic connection with the ground (or, if desired, with one pole of the cell) ???

I think it is, because the moment this connection ceased, the potential of the disc would change, & would be due to the attraction of the continuous plate. Is this right? If it is, the only way I see at present for keeping the pot. of the disc zero (or = that of one pole of cell) is by means of its contact in flush posⁿ w^m with the stretched wire across guard plate — i.e., if the suspension is by means of silk & not by means of wires working (radiometer-like) in cap shaped cavities at

top of guard plate. Please answer this, & give a suggestion, as soon as possible; for I am so confident about the instrument, that I shall let it made if I can do so for about £10 or £12.

The instrument maker thinks that the difficulties can all be got over, & he is to send me an estimate & also some suggestions for the suspension, in a few days today.

10/86

Remember this — that even if there should be the difficulties pointed out by you, the instrument will measure with ease much smaller EMFs than Thomson's attracted disc elect.

It is very good to be fully warned of difficulties, but, as among English military Critics, so among men of science, the word Impossible occurs too often and has acquired too much force. When a person says some "Impossible" with regard to anything, I say "Do it!" we can't send a respectable force to Afghanistan wh. would enable Roberts to massacre in a fortnight those wretches "because we could not get food enough for such a force". No, of course, the people of the country never eat anything — and this is a strange characteristic of the people of all countries wh. we invade — they have nothing to eat!

I am going to work regularly under Faraday Foster at University College Laboratory, after Monday next. My room