

The leaves collapsed slowly when ~~the~~
the position of the paraffin was altered so
that the sphere was out of the path of the
rays, the charge as might have been
expected was retained very long. Of course
as a great part of the radiation was
seamed off the time of leakage was
sometimes 4 or 5 minutes & as the behaviour
of the tube ^{may} well have altered in that
time since sometimes it - doesn't - set at
all steadily and - alters considerably in
half a minute, I used a second
electroscope also in a metal box but
directly exposed to the rays. This
consisted of a single leaf which was
attracted & repelled from a permanently
charged plate when the rays acted upon
it. ~~so~~ in fact a sort of unit charge
arrangement. I ~~had~~ thus obtained
a measure of the total energy falling
on the sphere by the number of divisions
& fraction of divisions.

The rate of leakage is considerably
diminished in vacuo, but a
strong magnetic field appears to
aid the leakage considerably.

15/3

Sydney House
Pembroke Road
Dublin

April 8th - 1896

My dear Dr. Fitzgerald

I am here again for a
few days. I remained at
Manchester till Thursday
last - hammering away at the
Röntgen affairs. I got a
special tube made for studying
the leakage in vacuo at different
pressures & was working at the
effect in a strong magnetic
field until I managed to break
the tube on Wednesday. I then
thought it was time to leave the
matter alone for the Easter.
Your last letter which I am

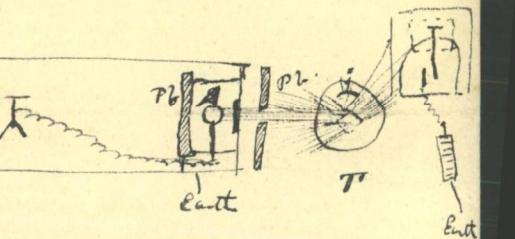
Sorry to have left unanswered so
long, was a source of some trouble
to me on account of the suggestion
in it with reference to the change of
Capacity in the case of a sphere
surrounded with paraffin produced
by the change of conductivity of the
air surrounding it. I should
be sorry to think you would in any
way imagine it was ~~due~~ ^{imposture} on my part in leaving your letter
unanswered before this. Considering
your kindness in giving me your
advice. But rather it was due
to the absence of an answer to give
which appeared to my mind in the
 slightest degree satisfactory.

I have tried a number of experiments
which I describe in full in a paper
I hope to send you soon. I think
I told you when I was here last - that

I had to get the electroscope to discharge
without letting the rays fall on it,
by sending them through two aluminium
windows in a metal
box containing the electroscope.
The experiment was a
difficult one enough on
account of, as I found, having to make
the box as air tight as possible

15/3

The second
diagram illustrates
an experiment
with paraffin



A beam of X-rays is sent through an
aluminium window in the tin box
and then penetrates the lump of paraffin.
It then penetrates the sphere in the
electroscope, also connected with the earth
connection in the box which is part
of the electroscope. The paraffin is ⁱⁿ contact
with the side of the box with the al window.
The sphere in the path of the rays,
the rays were prevented from entering into
the space occupied by air by a M. Screen.

153

