You never said anything about my beautiful little problem of action of current on magnetic pole.

I am surprised that you should be even doubtful about Townsend's proof. Is it not obviously the most beastly rule of thumb? Why does he not resolve W into any two components passing thro' ends of beam — Why parallel ones??? To me there is absolutely no reason in his proof. Parallel components look nice — that's all.

You have not given me a sketch of what you want me to say about Tallett. I shall write my new preface today, & send it to you in MS before it goes to the Clarendon Press.

Give me some slight account of $\Pi_{-\frac{1}{2}}$ if such a thing is possible, considering the vastness of the subject.

Do you think that the introduction of the Chapter on Strains & Stresses is a desirable innovation? I am disposed to say that the Universities should spend less time on Rational Statics, & devote some to Applied. M.

Philip Sandford Gal N 23 40

Philip Phil

Philip

Monday morning.

Coopers Hill. Staines.

Φ, 10/4

I have finally omitted the calculation of the reaction from the beam problem, retaining the investigation of the form of the beam, which, in the absence of your ever-ready criticism, I assume to be right. [Rather a good joke above, very pregnant with suggestions for others similar]

Tell me where a good account of the different Dynamo Machines can be found.

Let me for a moment call your attention to a point or two in Fleeming Jenkin's "Electricity & Magnetism". You will see at p. 17, end of §15 (Edition of 1873) the following statement which I take to be wholly wrong, & which I have contradicted in one of my examples: "the interior of a hollow conductor will be inductively

He is utterly wrong.

insulated

charged by any electrified body placed there, and the charge on the internal surface will be greater the closer the two surfaces are placed".

The underlined part is wholly wrong. The internal charge, as I have proved by Green's equation, is always equal in amount to the induced charge on the inside of the inner surface of the Conductor, & these two form a system producing no external action. Is not Jenkin wholly wrong ?!?!?!?!?!?!?

Secondly, I do not quite grasp the fact alleged by the Contact Theory men (Jenkin, &c.) that when a metal is dipped into a liquid a difference of Electric Potential is produced between them (see Jenkin, §19, p. 21). Surely, if a difference of Potential exists, there must be a flow, as there is Contact.

Thirdly, is the following a right proof of Jenkin's 3rd statement in §13, p. 13, that "if the wall of a room and an insulated body inside the room are at the same potential, there is no induction".

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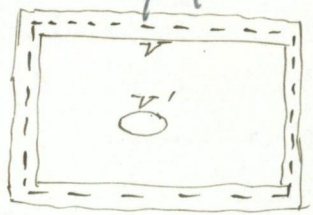

In the body of the walls describe any closed surface (dotted in figure). Then inside the body of the walls there is no force, assuming the walls to be Conductors.

In Green's = : $\int U \nabla V \, d\omega = \int U \frac{dV}{dn} dS - \int V \frac{dU}{dn} dS$

let $U = V$. Also let V = pot^l on walls, V' = pot^l on Conductor, M_0 = charge on inner surface of walls, M_0' = charge on Conductor. Then

$-VM_0 - V'M_0' = -\int R^2 d\omega$, where R = resultt^e force at the volume element $d\omega$.

$\therefore \int R^2 d\omega = V(M_0 + M_0')$, if $V = V'$.

Also apply the surface-integral of normal attraction to dotted surface

$\therefore \int N \, dS = 4\pi (M_0 + M_0')$.

But $N = 0$ everywhere on S $\therefore M_0 + M_0' = 0$

$\therefore R = 0$.