
Fourth Meeting, Friday, 9th February, 1900.

R. F. MUIRHEAD, Esq., M.A., B.Sc., President, in the Chair.

**Remark on Dr Peddie's Proof of the Potential Theorems
regarding Uniform Spherical Shells.**

By R. F. MUIRHEAD, M.A., B.Sc.

On reading Dr Peddie's paper, the following modification of the proof, which avoids summation, occurred to me:—

If in Figure 7 we take a point S on the circle BQD such that $PQ + PS = 2a$, where a is the radius, and a corresponding point S' such that $PQ' + PS' = 2a$, then it is clear by Dr Peddie's construction that the potential at P due to the zone of the spherical surface lying between planes through Q and Q' perpendicular to BD is given by $2\pi\sigma(PQ' - PQ) \cdot a/CP$, and is therefore equal to that due to the corresponding zone between S and S', since

$$PQ' - PQ = PS - PS'.$$

The potentials at P due to these zones being respectively $\frac{m}{PQ}$ and $\frac{m'}{PS}$, where m and m' are the masses of these zones, and these potentials being equal, their sum is

$$\frac{2(m + m')}{PQ + PS} = \frac{2(m + m')}{2a} = \frac{m + m'}{a}.$$

Thus the potential due to these parts of the surface is the same as if they were placed at distance a from P. But since the whole spherical surface is divisible into such corresponding pairs of zones, the potential at P due to the whole surface is the same as if its mass were *all* at distance a from P, *i.e.*, the same as when P is at C.

The foregoing applies to the case when P is an internal point, but the modification for the case of P external is easily made.

A general mechanical description of the Conic Sections.

By ALEX. MORRISON, M.A., B.Sc.