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 $2\pi\sigma(PQ' - PQ) . a/CP$, 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.

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