The Centre of Gravity of a Circular Arc.

By Mr G. E. Crawford, M.A.

To find the Centre of Gravity of a Circular Arc.

Let a (Fig. 12) be the radius, 2α the angle at the centre, AB the arc, of total mass m, G its centre of gravity symmetrically situated.

Imagine the arc to be part of a *circle of string* rotating uniformly with velocity u round C and of linear density ρ

Then if T be the Tension at either extremity

$$\text{Resolving} \quad 2T\sin\alpha = \text{Force to centre} = md w^2 = 2\rho a\alpha d w^2$$

$$\therefore \quad T = a\rho w^2 \frac{\alpha d}{\sin\alpha}$$

But T being constant, this formula must be constant, and $\therefore$ true for all values of α

$$\therefore \quad \frac{\alpha d}{\sin\alpha} \text{ is constant.}$$

But when $\alpha = 0$ its value is a

$$\therefore \quad d = a\frac{\sin\alpha}{\alpha}.$$

A Demonstration of the Apparatus used in Practical Skiagraphy by the Röntgen Rays.

By Dr Harry Rainy.

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