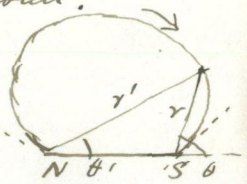
C. H.,

Sunday, Oct. 12.

60/20

Φ 1. A very elegant little result!



The magnetic curves of a magnet NS are given by taking $C_n\theta' - C_n\theta = k$ and varying k. Now imagine a current of intensity C to travel thro' any of these curves. My theorem is that the action of this current on the pole S is prop^{l} to

$$\frac{C}{l}\sqrt{2k-k^2},$$

where l = length of magnet.

This is an extremely nice & simple result & proved in a word.

$$\left[\frac{\mu i\, ds \sin\omega}{r^2} = \frac{\mu i\, d\theta}{r}. \text{ But } r = \frac{l}{2a}\frac{\sin\theta'}{\sin\theta - \theta'}\right.$$

$$\therefore \frac{d\theta}{r} = \frac{1}{l}\left[\cos\theta' \cdot \frac{\sin\theta\, d\theta}{\sin\theta'} - \cos\theta\, d\theta\right]$$

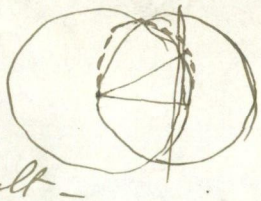
$$= \frac{1}{l}(\cos\theta' d\theta' - \cos\theta\, d\theta)$$

$$\therefore \text{Action} \propto \frac{C}{l}\overline{\sin\theta' - \sin\theta)}'', \text{ But at } S' \cos\theta = 1-k$$

& at N $\cos\theta' = -(1-k)$ $\therefore$ &c.)

Hence that curve for wh. $k=1$ produces max. effect. This one cuts magnet perp^{l}. & is constructed from the two circles in Prop. I

of 1st book of Euclid



Beautiful little result—
is n't it? Have you
ever seen anything like it?

M

10/20

Maunsell has gone over to pass his
exam^ns. He brought it some
lobsters & hornets from me.
I hereby give you a claw
of one of the lobsters.

No Proofs from You! Why???