To be preserved.

Received 6 November 1876

[24.2a]

J. M. Balfour

Sec R S E

The Secretary, R.S.E.

(archivist)

Opened by Jean Jones

15/10/87

P. G. Tait.

[24.26]

Opened by Jean Jones 15/10/1987
(archivist)

Note by Professor Tait -
put into the hands of the
Secretary of the Royal Society
Monday 16th October 1876.

Private.

24·3a

From Prof. J. R. Fraser.

(See Minute of Council, 6/12/94)

Recd from Prof Tait
on Monday 16 Octr 1876
JCMaxwell

The Theory of Knots

By Prof. Tait.

Royal Society

Oct. 16th 1876.

Substance for a clear coil.

A B C -- B .. A --C--
± ∓ ± ± ∓ ∓

5 laws for simplification.

Irreducible to

+ + + .. — — — — ---

Openable.

If the simplest is

+ − + − + − &c irreducible.

1/11/76.

Let $\theta, \phi, \ldots$ be gen^d. coord^{tes}. T a hom^s. quad^c. fct^n. of $\dot\theta, \dot\phi, \ldots$ & not involving t explicitly.

$$\text{Then } 2T = \Sigma . \dot\theta \left(\frac{dT}{d\dot\theta}\right)$$

Hence

$$\Sigma\, \dot\theta \left(\frac{dT}{d\dot\theta}\right) = 2T = T + H - V.$$

Diff^g.

$$\Sigma\left\{\ddot\theta\left(\frac{dT}{d\dot\theta}\right) + \dot\theta \frac{d}{dt}\left(\frac{dT}{d\dot\theta}\right)\right\} = \Sigma\left\{\frac{dT}{d\theta}\dot\theta + \left(\frac{dT}{d\dot\theta}\right)\ddot\theta - \left(\frac{dV}{d\theta}\right)\dot\theta\right\}$$

$$\text{or} \qquad \frac{d}{dt}\left(\frac{dT}{d\dot\theta}\right) = \frac{dT}{d\theta} - \frac{dV}{d\theta}.$$

Again

$$\delta A = \delta\int 2T\,dt = \delta\int (T + H - V)\,dt$$

$$= \int\left(\delta H + \Sigma\left\{\delta\theta\left(\frac{dT}{d\theta}\right) - \delta\theta\left(\frac{dV}{d\theta}\right) + \delta\dot\theta\left(\frac{dT}{d\dot\theta}\right)\right\}\right)dt$$

$$= \Sigma\,\delta\theta\left(\frac{dT}{d\dot\theta}\right) + t\,\delta H$$

$$- \Sigma\int \delta\theta\,dt\left(\frac{d}{dt}\left(\frac{dT}{d\dot\theta}\right) - \left(\frac{dT}{d\theta}\right) + \left(\frac{dV}{d\theta}\right)\right)$$

of which the unintegrated part vanishes by the former part.

P. S. T.