

Are we to look out for you
soon? Let me know. I have
23 birds* now in a big cage,
& a tame loose Starling.

I think that the best solution
of the Irish problem is, after all,
to hand the country over to the
Mahdi - if he'd take it.

With best respects to Mr. Ball, &
regards to Robin,

Yours very affly,
John Minchin

* To wit -

Woodpecker ... 1
Sparrows ... 4
Greenfinches ... 3
Chaffinches ... 3
Linnets ... 4
Titmice ... 2
Bullfinch ... 1
Lal ... - - - 1

Starlings ... 2

& some others.

10/27



Coopers Hill, Staines.

March 5th (about).
⁸

My dear Ball,

I have just got out of
bed, where (laid up with sore throat)
I had been thinking about your screws.
I think I remember some paper of
yours about the application of screws
to non-rigid systems; but I don't
know what you did in this line.

It occurred to me to enquire
into the simplest reduction of the
motion produced by the most general
kind of small strain, and the following
seems the true. Barring the rotation,
[which is mere rigid body exercise] the
strain at any point, P, of a body

can be produced by a "stretch" parallel to a line P_t , and a "squeeze" round another PM — that is, the relative motion of Q with respect to P may

be produced by stretching the perp. Q^P ^{found} ~~at~~ ^{on the plane thru'} P perp. to P_t , and accompanying this by squeezing Q in towards PM , along Qg , where Qg is \perp . PM .

$$\text{The stretch} = \varepsilon. QI, \text{ & the Squeeze} = \varepsilon'. Qg.$$

If the principal stretches of the strain at P are α, β, γ in descending order of magnitude, the lines P_t and PM are in the plane of (α, γ) , and we have

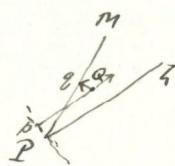
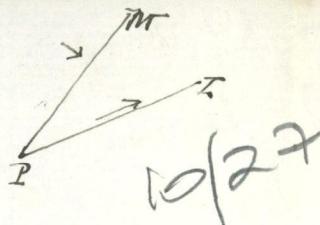
$$\varepsilon' = \beta; \quad \varepsilon = \alpha + \gamma - \beta;$$

while the angles ϕ and ψ , which P_t and PM make with the axis of α are given by

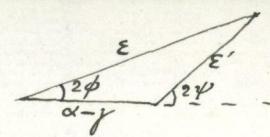
$$\tan \phi = \frac{\varepsilon \sin 2\phi - \varepsilon' \sin 2\psi}{\varepsilon \cos 2\phi - \varepsilon' \cos 2\psi} = \alpha - \gamma$$

$$\tan \psi = \frac{\varepsilon \sin 2\phi - \varepsilon' \sin 2\psi}{\varepsilon \cos 2\phi - \varepsilon' \cos 2\psi} = 0,$$

so that 2ϕ and 2ψ are the base angles



of a triangle, thus:



This seems to be the simplest form to which a general strain can be reduced. Do you know of this?

Am I right in supposing that at each point on the Cylindroid, there are (bar the axis) two generators, which only at the mid. point of the axis are at right angles? They are oblique at every other point. This seems to be the case, and might for the cursory suffer be explicitly stated.

I'm attacking the Screws in space time, as I have set about the 3^d ed. of the States. I shall make the book the "me plus ultra", &c., this time.

Thanks for last paper, which I hope to be able soon to understand.