and Tait (§837), that a ball of steel of any radius rotating with an equatorial velocity of 10,000 centimetres per second will be flattened to an ellipticity of $\frac{1}{7220}$. The Earth's equatorial velocity is 4·65 times this. Its density is less than that of steel: the density which we should assume is not the actual mean density but a mean in which greater weight is given to the superficial portions, because these have the greatest centrifugal force. Probably the actual mean to be adopted is 0·6 of the density of steel. We have, therefore, neglecting the effect of gravitation,

$$\epsilon'_0 = \frac{0·6 \times 4·65^2}{7220} = \frac{1}{557}.$$

But the deformation of the Earth is resisted by the gravitation of its parts. By a theorem given by Thomson and Tait, we should have, taking this effect into account—

$$\frac{1}{\epsilon'} = \frac{1}{\epsilon'_0} + \frac{1}{\epsilon} = 557 + 292 = 849.$$

Hence we have

$$\epsilon' = \frac{1}{849}.$$

Hence, considering only the solid Earth,

$$PP' : P'R = 292 : 849.$$

We have already concluded that the motion of the ocean will shift P' one-fourteenth of the way from P' to R. Hence, finally,

$$PP' : P'R = 353 : 788$$
$$PR : P'R = 1142 : 788.$$

Time of revolution of pole	= 443 days
Period for a rigid earth	= 306 „
Computed increase of period	= 137 „
Observed increase of period	= 121 „

The conclusion is that the Earth yields slightly less to the centrifugal force than it would if it had the rigidity of steel, and that it is consequently slightly more rigid than steel.

We have next to consider the effect of viscosity of the earth. Those geologists who have given special attention to the subject regard it as well established that the Earth yields under the weight of deposits as if it were a thin crust floating upon a liquid interior, and must therefore be a viscous solid, if a solid at all. The effect of viscosity is that the normal pole P of the Earth would be in slow but continuous motion towards the revolving pole R. Both P and R would then describe logarithmic spirals, so related that the tangent to the inner spiral at the position of P at any moment would pass through the position of R at that moment, and cut the R spiral normally. Thus the line PR would diminish from century to century by equal