Let Q be the mean position of the pole of figure of the Earth, and let us assume that the actual pole P revolves around it in a radius a, and in a period of one year. Let R be the position of the pole of rotation at any time. Then, at each moment, R is revolving around the fixed position P with a uniform motion, which, if continued, would cause it to complete a revolution in 427 days. Let us put

n, the mean motion of the radius PQ;

μ, the mean motion of R around the position of P;

x, y, the rectangular co-ordinates of R referred to Q as an origin.

The law of rotation then gives the equations

$$\frac{dx}{dt} = -\mu y + a\mu \sin(nt + c)$$

$$\frac{dy}{dt} = \mu x - a\mu \cos(nt + c).$$

The integration of these equations gives

$$x = \alpha \cos \mu t - \beta \sin \mu t - \frac{a\mu}{n - \mu} \cos(nt + c)$$

$$y = \alpha \sin \mu t + \beta \cos \mu t - \frac{a\mu}{n - \mu} \sin(nt + c),$$

α and β being arbitrary constants.

Substituting for μ and n their numerical values, we have, approximately,

$$x = \alpha \cos \mu t - \beta \sin \mu t + 6a \cos(nt + c)$$

$$y = \alpha \sin \mu t + \beta \cos \mu t + 6a \sin(nt + c).$$

Such a rotation as we have supposed, around a circle of $0''{\cdot}05$ in radius, would suffice to produce anomalies as large as those actually observed.

If the winters in Siberia and in North America occurred at opposite seasons, we should have no difficulty in accepting the sufficiency of annual falls of snow to account for the anomaly. But, under the actual circumstances, we must await the results of further investigations into the whole subject.

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