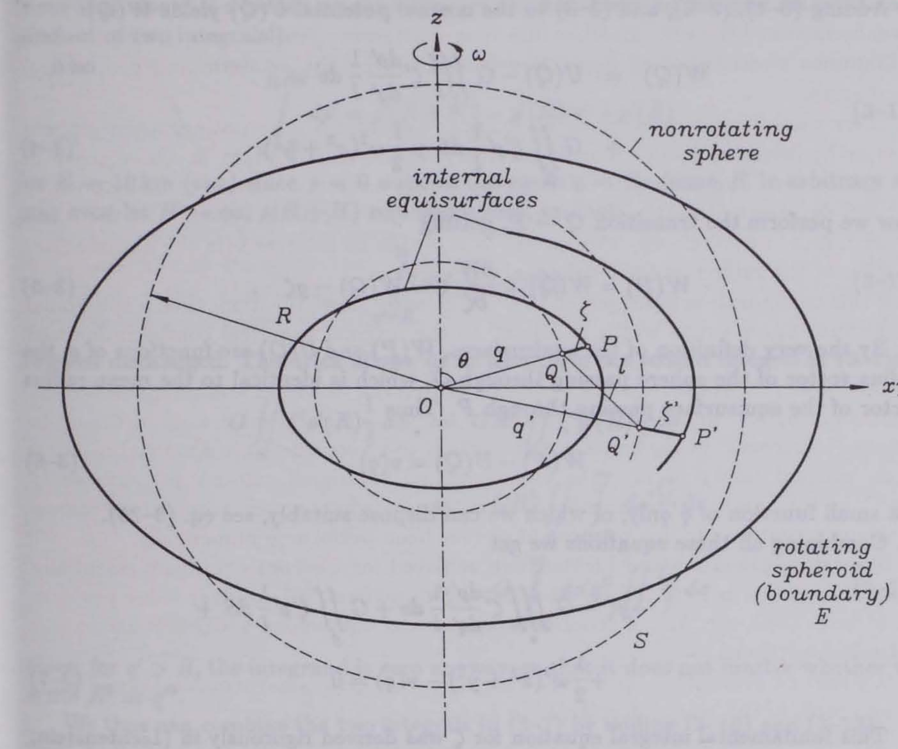

FIGURE 3.1: Rotation deforms a sphere into a spheroid

Thus the total effect of the change at the potential at point Q is

$$-G\iiint_v \zeta'\frac{\partial\rho'}{\partial q'}\frac{1}{l}\,dv \quad . \tag{3–1}$$

The meaning of $l = QQ'$, $q' = OQ'$ and ζ' is seen from Fig. 3.1, G denoting the gravitational constant and v the volume of S.

2. The effect of the "bulge" (positive if E is above S, negative otherwise) can be considered as a surface layer on the sphere S, with surface density $\rho'\zeta'$ (the integration variable is denoted by a prime also if the integration point is on S). This gives the contribution

$$G\iint_S \zeta'\rho'\frac{1}{l}\,dS \quad . \tag{3–2}$$

3. The centrifugal potential

$$\frac{1}{2}\omega^2(x^2+y^2) \quad . \tag{3–3}$$