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letters

The various quantities are: m_e (the electron rest mass) = 10^{-27} gm, $\hbar = 10^{-27}$ erg sec (Planck's constant), α_E = electromagnetic fine structure constant = $1/137$, α_S = Pion-nucleon strong coupling constant = 14, G_N = Newton's gravitational constant = 6.7×10^{-8} cgs units, G_F = Universal Fermi weak interaction constant = 1.5×10^{-49} erg cm³. *M thus turns out to be a gram!* We note that the expression for M does not involve any arbitrary numerical factors or factors of π . The dimensionless constants α_E and α_S occur in their lowest power. The proton being subject to decay, the electron rest mass is more appropriate. Thus the equation is a simplest possible combination.

It is also clear that no matter what units are chosen for the dimensional constants (like G_N , m_e , G_F) M will always have the magnitude of a one gram mass. It therefore appears that there is some justification for recommending the gram as a fundamental unit of mass!

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1/26/81

Physicist productivity

I read with a certain degree of amusement the comments concerning the longevity parameter W/H^2 and most recently the oblate spheroidal condition given by G^2/H (December, page 72) and their relation to the life expectancies of physicists.

We have never measured physicists by how long they live, but by what they produce, and a relation between productivity and the above parameters might be interesting. A good physique is the result of physical activity and good physics is the product of mental activity, and for a physicist there must be some correlation between mental and physical activity. Thus if we set $\Delta H \approx 0$, that is, all physicists are of the same height, then

$$W \propto G^2 \propto (BS)^2 \propto 1/P$$

where BS is belt size and P is the productivity.

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1/22/81

Physics and geometry

The relationship between physics and geometry, discussed in the letter of Robert Hermann in November (page 11) and the article of C. N. Yang in June (page 42), is interestingly illuminated by considering the article on