to achieve velocities much higher than about 6000 meters/second by direct explosive acceleration is quite impractical.

One anticipates that the rapid acceleration may subject the projectile to stresses which cause it to fracture or deform. These may be estimated by equating the stagnation pressure on the projectile to the maximum stress of deformation, σ_0. This yields

$$\sigma_0 = 2\rho_0 D^2 y''/9Q \tag{12}$$

In the process of numerical integration, y'' was sometimes tabulated. The largest values of y''/Q recorded were $\sim .5$. Putting this into Eq. (12) with $\rho_0 = 1.7$ g/cc and $D = 8.8 \times 10^5$ cm/sec yields $\sigma_0 \sim 150$ kilobars. It is not surprising, then, that explosive-accelerated projectiles shatter. The remarkable thing is that sometimes they don't.

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