Figure 2. Experimental measurements of the stratified drag ΔC_D on a sphere (from Greenslade 2000, by kind permission of the author): +, data from Mason (1977), the horizontal bars representing mean values and the vertical bars standard errors; $\diamond$, data from Lofquist & Purtell (1984). The continuous lines represent the models (1.16) for large F and (1.17)–(1.18) for small F.

$$A = 0.86, \quad B = 3.43 \qquad \text{(Lofquist \& Purtell 1984 data).} \tag{1.18b}$$

The stratified drag coefficient ΔC_D is defined, after Lofquist & Purtell (1984), Hanazaki (1988) and Shishkina (1996), by the decomposition

$$C_D(Re, F) = C_D(Re, \infty) + \Delta C_D(Re, F), \tag{1.19}$$

which separates, in the total drag coefficient $C_D(Re, F)$ depending on both the Reynolds number $Re = 2Ua/\nu$ and the internal Froude number $F = U/(Na)$, two contributions: one, $C_D(Re, \infty)$, of unstratified fluid dynamics, and the other, $\Delta C_D(Re, F)$, specific to the stratification; here a is the radius of the sphere and ν the kinematic viscosity. It has been verified by Lofquist & Purtell (1984), in the range $150 < Re < 5000$, that $\Delta C_D(Re, F)$ is effectively independent from Re. Hence $\Delta C_D(Re, F)$ represents an essentially inviscid stratified addition $\Delta C_D(F)$ to the drag.