plotted in figure 6. It is clear once more that τ_p does not depend on the mass.

TABLE 8.—*Sporadic Super-Schmidt meteors: residuals Δ as a function of integrated brightness.*

ϵ_∞	S.d. of mean	Δ*	S.d. of mean	no.
−1.049	±0.025	0.046	±0.147	25
−0.854	0.007	−0.051	0.130	25
−0.756	0.005	0.070	0.146	25
−0.664	0.004	0.022	0.137	25
−0.568	0.007	−0.302	0.126	25
−0.447	0.005	0.009	0.118	25
−0.329	0.008	−0.153	0.156	25
−0.169	0.008	0.093	0.114	25
+0.019	0.013	0.111	0.124	25
+0.454	0.045	0.093	0.121	22

*$\Delta = (\log \tau_p/\rho_m^2)_{obs.} - (\log \tau_p/\rho_m^2)_{least\text{-}squares}$.

The luminous efficiency as a function of fragmentation.—The results given in the section on effects of fragmentation lead us to investigate whether there is some correlation between the luminous efficiency and the degree of fragmentation of meteoroids. According to their fragmentation index χ, sporadic meteors have been sorted into 10 groups, and the weighted averages of the residuals Δ have been computed. The results are listed in table 9 and plotted in figure 7. A weak correlation appears between Δ and χ. The correlation coefficient is −0.73. An empirical equation correlating mean values of Δ and χ, obtained by the least-squares method, is

$$\Delta = (0.11 \pm 0.04) - (0.50 \pm 0.11)\chi. \qquad (25)$$

One would expect that meteors with a large χ had lower density. If this were so, their $\log \tau_p/\rho_m^2$ should be larger than the average. The results show just the opposite: Δ is positive for meteors with low χ and negative for meteors with a high degree of fragmentation. Therefore equation (25) may be interpreted as an actual dependence of the luminous efficiency on the degree of fragmentation of the meteors, such that a compact body is more efficient in producing light than a porous, crumbling one. The possible decrease of the density with increasing χ tends to mask the effect, so that the value 4 of the ratio of the luminous efficiencies at the two extremes has to be considered as underestimated. It is worth noting that the average value of s does not vary systematically with χ, so that even if we reduce the residuals to the average values of s, we arrive at practically the same results. The same is true also if we take the data uncorrected for the difference in density between short- and long-period meteors.

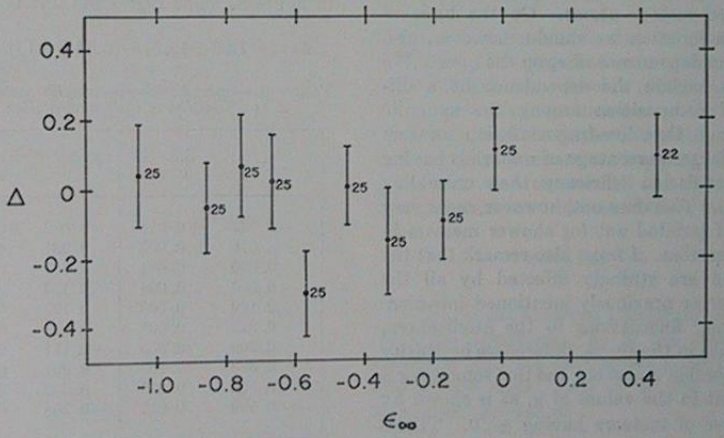

FIGURE 6.—Sporadic Super-Schmidt meteors: average residuals Δ for groups of meteors of different brightness ϵ_∞, $\Delta = (\log \tau_p/\rho_m^2)_{obs} - (\log \tau_p/\rho_m^2)_{least\text{-}squares}$. (See table 8.)