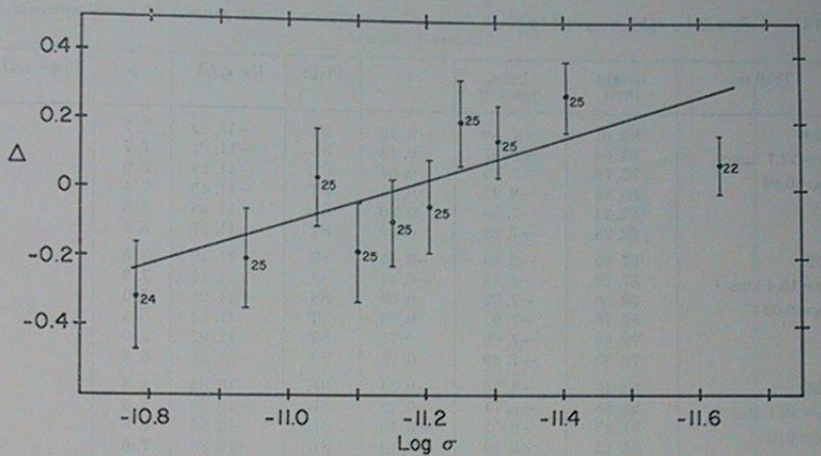

FIGURE 8.—Sporadic Super-Schmidt meteors: average residuals Δ vs. log σ. Straight line from a least-squares solution. $\Delta = (\log \tau_p/\rho_m^2)_{obs} - (\log \tau_p/\rho_m^2)_{\text{least-squares}}$. (See table 10.)

and the correlation coefficient is −0.75. Also in this case the correlation is not appreciably changed by reducing the residuals to the average value of $\bar{s}$, because $\bar{s}$ does not vary systematically with log σ. This correlation is similar to the preceding one between Δ and χ. In fact, the most efficiently radiating meteors are those with smaller values of σ, i.e., values near to those pertaining to compact bodies. This correlation must, however, also be taken with caution, for substantially the same reasons advanced for the preceding one. Log σ is known with a better accuracy than χ, but its physical meaning is questionable for fragmenting meteors.

Independence of the luminous efficiency from the atmospheric density.—As I stated in the introduction, there are no theoretical reasons for a proportionality between the luminous efficiency τ_p and the atmospheric density ρ_a. This can also be proved directly by the observational data. In fact, for a large minority of the Super-Schmidt meteors of the present sample, several decelerations were determined at heights that are enough different to allow us to see if τ_p depends on ρ_a and how. Obviously, when dealing with meteors showing a non-negligible degree of fragmentation, one must apply a correction $3\chi(s-s_0)$, as discussed above. In table 11 are listed values of log τ_p/ρ_m^2 computed by individual decelerations at different heights for each of several randomly chosen sporadic meteors having χ close to or equal to zero. The table also contains the data concerning a few other meteors that experienced fragmentation in varying degrees, to the extent of showing in real cases how the correction $3\chi(s-s_0)$ works. As we expected, there is absolutely no dependence of τ_p on ρ_a, and the hypothesis advanced by Ananthakrishnan is completely meaningless.

TABLE 10.—*Sporadic Super-Schmidt meteors: residuals Δ as a function of log σ.*

log σ	S.d. of mean	Δ	S.d. of mean	no.
−10.785	±0.016	−0.317	±0.155	24
−10.937	0.007	−0.207	0.146	25
−11.040	0.005	0.035	0.145	25
−11.099	0.003	−0.184	0.146	25
−11.150	0.003	−0.094	0.128	25
−11.204	0.003	−0.051	0.138	25
−11.251	0.002	0.200	0.125	25
−11.304	0.004	0.141	0.108	25
−11.406	0.007	0.287	0.105	25
−11.633	0.032	0.078	0.086	22

Correlation coefficient between mean values of Δ and log σ = −0.75.