Very recently Rajchl (1963) has found that the luminosity coefficient $\tau_{op}$ decreases during the meteor flight, being proportional to $(1+\rho_a v)^{-1}$. Rajchl reached this conclusion by analyzing only 8 meteors and by using some approximated equations to which we may apply the same criticisms as to Ceplecha's work in point (2) of the introduction. The present results show that this dependence also does not exist.

*Results for small-camera meteors.*—While shower meteors are less than one-third of all Super-Schmidt material, they are the majority among small-camera meteors; therefore the number of sporadic meteors available for the present analysis is small. This is also the result of the lack of accuracy in the decelerations of many of them, which often leads to weights smaller than 1. Because of their poor reliability, meteors having $w<1$ have been removed from the final analysis. Therefore, only 44 sporadic meteors are available for the analysis. The basic results are listed in table 12 (a and b). The difference in density between long-period meteors and those of the Jupiter family is also present among these meteors, as is shown in the table. The consequent difference in the average values of log $\tau_p/\rho_m^2$ is estimated to be 0.25 (for Super-Schmidt meteors it was 0.30). After the correction, the least-squares solution gives

$$n=0.9\pm0.5, \tag{28}$$

and the centroid of the distribution is

$$\log \tau_p/\rho_m^2=-11.69\pm0.08$$
$$\log v=6.39\pm0.02. \tag{29}$$

The accuracy of the determined value of $n$ is very poor, but this value is very close to that obtained for the Super-Schmidt meteors. For $\log v=6.39$ the value of $\log \tau_p/\rho_m^2$ for Super-Schmidt meteors is $-11.32\pm0.04$, with a difference of $0.37\pm0.12$ from the value (29) for small-camera meteors. By dividing the sporadic small-camera meteors into two groups, so that the first group contains meteors having $\epsilon_\infty$ not exceeding that of the brightest Super-Schmidt meteor, and reducing the results to $\log v=6.39$, we get:

$$\log \tau_p/\rho_m^2=-11.16\pm0.12;\ \epsilon_\infty=0.6\pm0.1 \tag{30}$$

$$\log \tau_p/\rho_m^2=-11.86\pm0.11;\ \epsilon_\infty=1.8\pm0.1. \tag{31}$$

The difference between the two groups is quite clear. The faint meteors have about the same value of $\log \tau_p/\rho_m^2$ as the Super-Schmidt (the difference is equal to the probable error), while the bright meteors appear much more dense. The result is

$$(\rho_m)_{\text{bright meteors}}\simeq 2(\rho_m)_{\text{faint meteors}}. \tag{32}$$

The group of fainter small-camera meteors has an average brightness near to that of the Super-Schmidt meteors of the last of the 10 groups in table 8 (p. 161), which do not show any difference from the fainter Super-Schmidt meteors. The maximum $\epsilon_\infty$ for the sporadic Super-Schmidt meteors is 0.94. Therefore we are led to conclude that the gap in density is close to $\epsilon_\infty=1$. It corresponds roughly to a photographic magnitude $-2.7$ or to a visual magnitude $-1$, which is just the limit of the fireballs.

*The value of $\tau_{op}$.*—The observational data allow the determination of the ratio $\tau_p/\rho_m^2$, but it is impossible to separate these two parameters except in the few cases in which we have complete evidence that the meteors are of asteroidal origin. Only one of the discussed samples, meteor no. 1242, has been recognized to be certainly asteroidal by Cook, Jacchia, and McCrosky (1963), who found evidence that its composition was similar to that of meteoritic stone ($\rho_m=3.4$ gcm$^{-3}$). This meteor has 4 decelerations that allow values of $\log \tau_p/\rho_m^2$ very close to one another. The weighted average is

$$\log \tau_p/\rho_m^2=-14.115\pm0.076 \tag{33}$$
$$\log v=6.037.$$

The meteor does not show progressive fragmentation. Its value of $\chi$ is $-0.10$, so that a reduction of all the decelerations to the same value of $s$ does not change the value of equation (33). The accuracy of the decelerations is very good. The average weight $p$ is 5.9, and $w$ is about 5. By assuming $\rho_m=3.4$ gcm$^{-3}$ and $n=1.0$, we get

$$\log \tau_{op}=-19.09\pm0.08. \tag{34}$$