TABLE I.

Supernova	Half-life (days)	α
SN 64	4.80	0.81
SN NGC 1003	5.53	0.90
SN IC 4182	5.12	0.89

mag./day in B for roughly 40 days followed by a more gradual linear decline of 0.018 mag./day, which is very similar to the behavior of the type I supernovae in NGC 1003 and IC 4182 discussed by Baade and Zwicky. $B-V$ reddens linearly at 0.04 mag./day followed by a period of roughly constant $B-V$. The time interval between the (estimated) maximum and the change in slope is about 40 days, again in good agreement with other type I supernovae.

It has long been known that the tail of a type I light curve could be explained by an exponential intensity decay with a half-life of 55 days or a decay time of 79.3 days. From the data presently at hand it seems that in addition the initial decline can also be fitted by such a decay formula. If we assume that $I = I_0[\alpha \exp(-t/T_1) + \beta \exp(-t/T_2)]$, where $\alpha + \beta = 1$, and $T_2 > T_1$, we can calculate T_1 assuming the T_2 given above. This operation has been carried out for SN 64, SN NGC 1003, and SN IC 4182, the latter two taken from the data published by Baade and Zwicky. The results are given in Table I; a good fit was obtained in each case. Note that the table gives the half-life, not T_1 . Thus the average half-life is 5.15 ± 0.25 days and the ratio of the intensities of the two components is always nearly 9:1.

The observed maximum was at $B = 14.1$; correction for absorption in the Virgo galaxy yields $B_0 = 13.9$. With a distance modulus of ≈ 33 mag., obtained from an estimate of the absolute magnitude of the galaxy, $(M_B)_0 \approx -19.1$.

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Upper Limit of Meteoritic Influx from Coronagraphic Measurements in the Stratosphere. GORDON NEWKIRK, JR., AND JOHN A. EDDY, *High Altitude Observatory*.—During two flights with a balloon-borne coronagraph to a maximum altitude of 80 000 ft, observations of the wavelength distribution of skylight from 3700 to 8300 Å at a scattering angle of $2^\circ 4'$ as well as the angular distribution at $\lambda = 4200$ Å from scattering angles $2^\circ 6'$ to 58° were secured. The brightness of scattered light contributed by the coronagraph was decreased to less than 10^{-8} times the brightness of the sun by means of an external occulting disk. The pointing gimbals developed for Stratoscope I centered the coronagraph on the sun to an accuracy of ± 1 minute of arc.

At 80 000 ft the sky brightness at a scattering angle of $2^\circ 4'$ was still nearly twice that expected from the Rayleigh sky. The solution of the radiative transfer problem in a pure, molecular atmosphere by Coulson, Dave, and Sekera allows the additional scattering due to stratospheric aerosols to be determined from the observations. The angular and wavelength distributions of the light scattered by the aerosols can then be used to determine the parameters of the distribution and the number of contaminating particles above the apparatus.

On the assumptions that all the aerosols above 80 000 ft are meteoric in origin and that the debris settles through a quiet atmosphere, we determine the following *upper limits* for the meteoric influx:

particle radius (μ)	flux (particles/m ² /sec)
0.1	4×10^4
1.0	4×10^{-3}

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Zwicky's Deduction of the Luminosity Function of Cluster Galaxies. JERZY NEYMAN AND ELIZABETH L. SCOTT, *Statistical Laboratory, University of California, Berkeley, California*.—The purpose of the present paper is to point out what we believe to be an oversight in Zwicky's deductions [*Morphological Astronomy* (Springer-Verlag, Berlin, 1957), p. 171] leading to an exponentially increasing luminosity function for cluster galaxies. Our justification for presenting this paper is that Zwicky's formula is radically different from the bell-shaped curves found for field galaxies and that the comparison of the population of field galaxies with that in clusters is important for the understanding of evolutionary processes in extragalactic space.

The premises of Zwicky's proof include the tacit assumption that for clusters at varying distances D , selected in a particular way so as to achieve uniformity, a quantity $\bar{d}$, described as the average absolute diameter, is independent of D . On certain additional tentative assumptions Zwicky finds $\bar{d} = 1.31 \times 10^6$ pc. The assumption (i) that there is no systematic change of clusters with the distance, and the assumption (ii) that $\bar{d}$ is constant are jointly essential for Zwicky's proof. However, they appear self-contradictory. In order to show this we tentatively assume that both (i) and (ii) are perfectly true so that all clusters considered are identical and $\bar{d} = d$ has a fixed value. According to the definition, $d = \gamma D$, where γ , the angular diameter of the cluster, is defined through that isopleth at which the density, $\rho_f + \rho_c$, of the three brightest magnitude classes of galaxies is equal to double the density, say ρ_f , in the same range of brightness in the surrounding field. Thus $\rho_c = \rho_f$.