Miller, Freeman D. Photometry of Comet Abell (1953g).

Comets of modest apparent dimensions exhibit few features which can be interpreted with certainty as the envelopes or trajectories of ejected material. For such comets, the information available for comparison with theories of the mechanism of coma and tail formation is restricted to the distribution of surface intensity on the plane of the sky. It is essential that observations of this kind refer, as far as possible, to radiation reflected or emitted by a single type of particle (dust, C_2 , CN , etc.).

The program for observation of comets drawn up for the Curtis Schmidt calls for initial objective-prism plates to establish the character of the spectrum; followed by photometrically standardized direct exposures with plate-filter combinations chosen to isolate significant wavelength bands of the cometary radiation.

Comet Abell was observed in April and May 1954 according to this plan. The spectrum, photographed on 24 April with the combined four- and six-degree objective prisms (110 A/mm at $H\gamma$) consisted of a continuum 15" wide, on which was superposed a typical emission spectrum in which the bands CN λ 3883, C_2 λ 4050 and C_2 λ 4737 were prominent. Accordingly, direct exposures were made on 24 May (30 minutes) and 26 May (6 and 46 minutes) with 103a-O emulsion and Schott GG5 filter; a combination selected to isolate the spectral region of the C_2 λ 4737 band.

The image on the short exposure of 26 May has a well-defined, intense circular nuclear disc 15" in diameter, with but a trace of the inner coma. Microdensitometer tracings, reduced to intensity profiles, show that the intensity increases sharply within 10" of the center of this disc, reaching a maximum value at least triple that at 10". The same nuclear disc is visible on the longer exposures on 24 and 26 May. The coincidence of the width of the continuum observed on the spectrogram of 24 April with the diameter of the nuclear disc a month later suggests that the two are related.

The 30 and 46-minute exposures were analyzed with the isophotometer of the Univ. of Michigan Observatory. Although these plates were intended primarily for study of the light-distribution in the coma, the tail can be traced to a maximum distance of 14' from the nucleus. The shorter extension (nearly at right angles to the principal tail, as described by Abell) can be followed to half this distance. The axes of the

tails are well defined by two radii of minimum intensity gradient. In the intervening sector, the radial gradient varies slowly and smoothly. Details of the intensity distribution present a number of interesting features for theoretical interpretation.

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Miller, Walter J., S.J. VV 21-25 and the Vatican variable-star program.

Periods, photographic amplitudes and median magnitudes have been obtained for VV 21-25, five new RR Lyrae variables in the Cygnus Cloud; they will be published in a forthcoming number of the *Ricerche Astronomiche*, along with identification charts, magnitudes of comparison stars, composite and mean light curves, and light elements.

In all, some three hundred new variables have now been found in the Cygnus Cloud alone. At maximum, many of these variables are below the sixteenth photographic magnitude. Among these faint variables, the RR Lyrae and classical Cepheids are being given special emphasis. The Vatican $f/4$ 25-38 inch Schmidt telescope, due to enter into regular service in 1955, in conjunction with a new Haffner-Sartorius iris-diaphragm photometer, will make it possible to provide photo-red magnitudes even for the faintest of these cepheids and should reveal still fainter variables.

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Mohler, O. Observations of the K line in the solar spectrum.

Direct photoelectric observations of the K line in the solar spectrum demonstrate that considerable precision in wave-length measurement can be attained on the same tracings that are used for photometric purposes. First results of wave-length measurement of the VK₂, K₃, and RK₂ components of the K line agree in general with the results of St. John for the center of the disk, but do not confirm the center-to-limb variation in wave length. Although the components of the K line are highly variable in intensity, for all points observed the VK₂ component is always the stronger. VK₂ and RK₂ approach equality near the sun's limb, and in plage regions.

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