PHOTOGRAPH OF CUNNINGHAM'S COMET, 1940 DECEMBER 29

By George H. Herbig and George W. Bunton

The accompanying photograph of Comet Cunningham (1940 *c*) was made by the writers with the 5-inch Schmidt camera of the Department of Astronomy, University of California, Los Angeles, from $18^h\ 01^m$ to $18^h\ 21^m$ P.S.T., December 29, 1940. The camera, of 25 inches focal length, is mounted on the 12-inch Zeiss refractor of the Griffith Observatory, Los Angeles, the latter instrument being used as the guiding telescope. During the 20-minute exposure, the comet moved a distance of about 90″, mostly southward. Unfortunately, it was impossible to make a longer exposure, on account of the comet's low altitude and consequent position in the evening twilight. The photograph was taken on Eastman Super-Panchro Press cut film, was developed in "*D-76*" developer, and was enlarged 4.2 times. The scale is, accordingly, about 1 mm = 76″. The angular dimensions of the head were about $4\frac{1}{2}' \times 5\frac{1}{2}'$. The tail was conspicuously double, the two components forming an angle of about 20° with each other. The western component appears to be about $1\frac{1}{2}°$ long on the print, but on the original negative it can be traced faintly to a distance of approximately 2°.2, where it runs off the edge of the film.

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THE SPECTRUM OF NOVA MONOCEROTIS, 1939

By P. Swings and O. Struve

A slit spectrogram of N Mon 1939, secured at the McDonald Observatory on November 12, 1940, when the star was approximately of magnitude 11.3, shows that the spectrum has

changed considerably since the observations by Whipple[1] and Sanford.[2] At the end of 1939 the emission lines of hydrogen, λ4640, N1, N2, and λ4363 were very strong; on Sanford's spectrogram Hβ was practically of the same intensity as N2 or N1. On our spectrogram, only Hα is strong in the Balmer series, whereas Hβ is very weak compared to N1 and N2; nearly all the visible light is now due to N1, N2, and Hα (with possibly the forbidden [N II] lines at λλ 6548.4 and 6583.9). The continuous spectrum is extremely weak and the emission lines consist of:

Hα (9), Hβ (3), Hγ (3), Hδ (2), Hε + [*Ne* III] (1);
N1 (10), N2 (8), 4363 [*O* III] (3); 5755.0 [*N* II] (2);
4686 *He* II (1); 4634 — 4640 *N* III (2); 4076 [*S* II] (0).

As is usual in novae, the transition of auroral type, λ 4363, has decreased in intensity compared to the nebular transitions N1 and N2. The total widths of N1 and N2 are approximately 1730 km/sec, as compared to 2100 km/sec at the time of Sanford's observation.

McDonald Observatory
November 1940

ADDITIONAL MEMBERS OF THE BALMER SERIES IN THE ABSORPTION SPECTRUM OF THE SUN

By Gerard F. W. Mulders

The highest member of the Balmer series of hydrogen identified definitely in the *Revision of Rowland's Preliminary Table of Solar Spectrum Wave Lengths* is Hε. The next line, Hζ = H8, is indicated by the following footnote: "Haze perhaps

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[1] *H.A.C.*, No. 517, Dec. 26, 1939 (description based on spectrograms taken from Oct. 21 to Dec. 26, 1929).

[2] *Pub. A.S.P.*, **52**, 35, 1940 (spectrogram taken on Dec. 26, 1939).