

## OUR ASTRONOMICAL COLUMN.

PHOTOGRAPHS OF MOREHOUSE'S COMET, 1908c.—Four excellent photographs showing remarkable details in the structure of comet 1908c are reproduced on two plates accompanying Circular No. 148 of the Harvard College Observatory.

These photographs are selected from a series of fifty-three taken, between September 3 and November 29, by the Rev. Joel Metcalf at Taunton, Mass. The instruments employed were two photographic doublets, one of 12 inches aperture and 87.5 inches focal length, the other of 5.8 inches aperture and 20 inches focal length, both constructed by the observer.

As the nucleus of this comet was too indefinite to be "followed" successfully, Mr. Metcalf employed the method by which he has obtained such remarkable success in the photography of minor planets. This consisted in following on an adjacent star and moving the cross-wires, with a



Comet Morehouse (1908c), 1908 November 21, 10h. 32m.—11h. 48m. (G.M.T.)

micrometer screw, every minute by an amount sufficient to compensate for the comet's theoretical motion as indicated by the ephemeris.

The photographs are reproduced in half-tone from double-contact prints, thus intensifying the fainter details of the tail, although some of the finer structure of the more exposed head has been lost in the process. On the photograph of 1908 November 15, 11h. 6m. (G.M.T.), the main tail presents a twisted appearance more marked than on any other photograph we have yet seen. The second photograph shows a remarkable waviness of the stronger northern edge of the tail with curious interlacings, and, as seen from the configuration of the surrounding stars, it is a connecting link between the November 16 and 18 photographs reproduced by Prof. Barnard in the January number of the *Astrophysical Journal*.

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The photograph which we here reproduce was taken with 76 minutes' exposure on November 21, the time of mid-exposure being 11h. 10m. (G.M.T.). It will be noticed that, in addition to that contiguous to the nucleus, there are two constrictions in the main tail, apparently indicating two separate outbursts of activity on the part of the nucleus in the ejection of tail matter; the approximate position of the centre of the plate is 18h. 58m., +1° 30'.

For the benefit of other observers who wish to make a detailed study of comet 1908c, Prof. Wolf publishes in *Astronomische Nachrichten*, No. 4311, a list of the photographs taken with ten different objectives at the Heidelberg Observatory.

Between September 6 and November 27, 1908, 147 plates were taken on thirty-three different nights, and the present list gives the date, time, and duration of each exposure, with a note as to the instrument employed.

RELATION BETWEEN THE MAGNITUDES AND COLOURS OF STARS.—In No. 4312 of the *Astronomische Nachrichten* (p. 249) Herren Muller and Kempf discuss the relationship which holds between the magnitudes and colours of the stars of the Potsdam Photometrischen Durchmusterung.

The number of stars included in the discussion is 14,172, and these are tabulated, in tenths of a magnitude from 0.0 to 9.9, under four divisions of colour, viz. white, yellowish-white, whitish-yellow, and yellow, the last-named including the few orange and red stars. A summary table shows that by far the greatest number (6324) of the stars considered are classified as yellowish-white, a little more than half this number are whitish-yellow, whilst the "white" and the "yellow, &c.," stars are equal, 2043 in each case. In another table, showing percentages, the white stars show a tendency to increase as the fainter stars are reached, and this increase is more marked in the yellowish-white class. In the whitish-yellow class the percentage decreases in both directions from the seventh magnitude, although the deficiency is more marked towards the fainter stars. The most striking variation is in the "yellow, &c.," class, where the percentages rapidly decrease between magnitude 4.5 to magnitude 9.0.

A second part of the discussion deals with the relation between colours and magnitudes and the galactic latitudes of the stars. The results show, *inter alia*, that the maximum of the brighter white stars occurs in galactic latitudes  $-11^{\circ}$  to  $-30^{\circ}$ , whilst for the fainter white stars the minimum is not at the galactic pole, but in galactic latitudes  $+30^{\circ}$  to  $+50^{\circ}$ .

A REMARKABLE PROMINENCE.—No. 2, vol. xxxviii., of the *Memorie della Società degli Spettroscopisti Italiani* contains an account of two remarkable prominences observed by Father Chevalier at the Zô-sè Observatory on July 30 and 31, 1908.

Both prominences were observed in about position-angle  $80^{\circ}$ , and were evidently connected with the fine spot groups which appeared round the limb at the beginning of August last. Their changes of form and their general shapes are shown by a series of drawings given on a plate accompanying the paper, and it is seen that both formed well-marked arches; but it is to the spectrum observations that the greatest interest is attached.

On July 30 not only were C, D<sub>3</sub>, and F seen reversed, but also the lines of helium at  $\lambda\lambda$  6678.2 and 7065.5; none of the metallic lines was bright, but between b and F two bright lines, probably helium  $\lambda$  5016 and  $\lambda$  4922, were found.

In addition to the bright lines, however, there was a continuous spectrum, due to the prominences, strong enough to efface, or weaken, the atmospheric spectrum on which it was superposed. A similar phenomenon was observed on August 3, 1872, by Young, who attributed its appearance to an abnormal pressure on the gases emitting it. In the present case it is difficult to see how pressure could operate, and Father Chevalier is inclined to attribute the bright continuous spectrum to heated solid particles condensed from the metallic vapours carried up by the rush of gases.

A strange bright line at about  $\lambda$  5872.50 was also seen both on July 30 and 31, and on the latter date a similar, but weaker, line was seen on the other side of D<sub>3</sub> at about  $\lambda$  5879.9.