

designations of each star, Mr. Backhouse gives the magnitude as shown in eleven different publications, and then gives a weighted mean, the system of weighting being explained in the preface. Those amateur astronomers who have recently been struggling with the intricacies of various systems, in trying to understand the published magnitudes of Nova Geminorum No. 2, will appreciate the usefulness of such a catalogue. The work contains 186 quarto pages, and is published by Hills and Co., Sunderland.

THE PHOTOGRAPHIC TRANSIT.—The results of further experiments with a photographic transit, carried out by Prof. Hirayama during 1907–08, are published in the second fascicule of vol. v. of the *Annales de l'Observatoire astronomique de Tokyo*. They show that there is no change of the mean error either with the declination or with the photographic magnitude, and that the instrument is capable of producing very valuable results.

PHYSICS AND ASTROPHYSICS.—In No. 12 (1911) of the *Bulletin de la Classe des Sciences, Académie Royale de Belgique*, is published a most interesting lecture by M. J. E. Verschaffelt, in which the author shows how deeply the physical sciences are indebted to the results secured in astronomy for the suggestion, or the confirmation, of many of their fundamental concepts. For examples he quotes, *inter alia*, Newton's and Kepler's work on gravitation, Roemer's determination of the velocity of light reinforced by Bradley's discovery of aberration, and the idea of the pressure of light suggested by the solar repulsion of cometary matter. It is interesting to note that at the earth's surface the pressure of the solar radiation on each square metre of a black body amounts only to two-thirds of a milligram. In conclusion, M. Verschaffelt strongly expresses the hope that astrophysics may be officially included in the programme for the doctorate in the Belgian universities.

THE PARALLAX OF NOVA LACERTÆ, 1910.—From observations made at Yerkes Observatory during December, 1910, and January, 1911, Prof. Slocum finds the relative parallax of Nova Lacertæ to be $+0.013'' \pm 0.014''$. As the average parallax of his comparison stars, according to Kapteyn's table, may be taken as $0.005''$, the absolute parallax obtained for the nova is $+0.018''$. Too great an accuracy cannot be claimed for this result, but if it is correct the outburst producing the nova occurred some 180 years ago. (*Astrophysical Journal*, vol. xxxv., No. 2.)

NOVA GEMINORUM NO. 2.

AN account of the discovery of Nova Geminorum No. 2 is given by Herr Enebo in No. 4564 of the *Astronomische Nachrichten*. After observing the variable SV Tauri, at 8h. 32m. (M.E.T.) on March 12, Herr Enebo's eye, wandering over the neighbouring constellation, was arrested by the appearance of a companion to θ Geminorum which he had not noticed when observing that region four days earlier; the new object was then of magnitude 4.31 on the Potsdam scale. Herr Enebo's subsequent observations indicate that the nova was at its brightest when discovered, or on March 13, when he estimated the magnitude as 4.23, although other observers found it to be about 3.5 on March 14.

Herr Jost publishes a list of comparison stars, ranging from 4.6 to 8.3 in magnitude, and gives the colour of each so that comparisons with the nova may be facilitated. Dr. Wolf publishes a photographic chart of the nova region taken in January, 1909, and gives the magnitudes of surrounding stars down to about 9.5.

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Dr. Guthnick reports a brightening of 0.4 mag. on March 22, accompanied by a diminution in the redness of the star. The red colour is quite marked, and makes the nova stand out from the other stars in a field of $1\frac{1}{2}$ degrees; the Rev. T. E. R. Phillips is of the opinion that it is one of the reddest stars he has ever seen.

A communication from Prof. E. C. Pickering, published in No. 4565 of the *Astronomische Nachrichten*, states that Dr. Curtiss found the magnitude on March 13.7 to be 3.9, the spectrum then being like that of Nova Aurigæ. The Harvard photographs of March 13, however, showed only dark lines, and Prof. Pickering suggests that the bright lines seen with a slit spectroscope at the Ann Arbor Observatory may have been too narrow on that date to appear on the Harvard objective-prism spectra. Dr. Curtiss's observations showed a recessional velocity of 5 kms. for the dark reversals of the H and K lines.

Prof. Pickering also states that on March 16 the spectrum was of the normal novæ type, and the nebular lines were first seen. Better weather evidently prevailed in the United States than in England on March 13 and 14, for Prof. Pickering reports that seven good photographs of the spectrum were secured on each of those nights.

At the Hamburg Observatory spectrograms were obtained on March 20, 23, and 27, and many broad bright lines, especially the hydrogen series H β to H η , are shown. Prof. Schwassman identifies two of the other bright lines with lines at $\lambda\lambda$ 4230 and 4176 in Vogel's spectrum of Nova Aurigæ, while a third lies halfway between $\lambda\lambda$ 4315 and 4288. On March 27 the bright K line was indistinct, but other bright lines were more marked than on the previous dates. Prof. Schwassman identifies three of these, at $\lambda\lambda$ 4583, 4557, and 4525, with lines of Fe, Ba, and Ti.

Greenwich observations on March 15, reported in *The Observatory* (No. 447, April) showed the visual brightness to be one-quarter of a magnitude, and the photographic one magnitude, fainter than θ Geminorum. The photographic magnitudes were secured by placing a grating, made of zinc strips, with spaces of equal width, in front of the object glass, and are as follows:—March 20, 5.5; 21, 6.0; 26, 6.1; 28, 6.3; 29, 6.5; 31, 6.0, and April 1, 6.5.

At Cambridge, reports Prof. Newall, the nova on March 14 was at least one magnitude brighter than θ Geminorum; as the estimated magnitude on March 15 was 4.2, it would appear that the nova lost $1\frac{1}{2}$ magnitudes in 24 hours. A series of photographs of the spectrum shows interesting changes in the relative brightness of the lines, in the structure of the hydrogen lines, and in the appearance on March 22 of a second pair of broad bright and dark lines on the more refrangible side of each hydrogen line.

According to observations by M. Luizet, published in *L'Astronomie* for April, the nova decreased in brightness to the extent of one magnitude between 10h. on March 15 and 7h. 50m. on March 16.

M. Baume Pluvinel's spectra observations on March 21 show each of the hydrogen lines H β to H ϵ doubled or trebled, and all displaced towards the red.

Dr. Easton reports a second recrudescence of brightness on April 9, when, at 9h. 15m. (G.M.T.), the H.P. magnitude was 6.0, but the brightening probably occurred earlier than this, although bad weather prevented Dr. Easton observing it. A secondary maximum is plainly shown, in Dr. Ebell's series of observations, for March 30 (*Astronomische Nachrichten*, No. 4564). Dr. Strömgen's series shows that on March 24, the previous maximum, the colour became bluish instead of red as previously.