OUR ASTRONOMICAL COLUMN.

THE SPECTRUM AND ORBIT OF β SCORPII.—In No. 14, vol ii., of the publications of the Allegheny Observatory, Drs. Daniel and Schlesinger discuss the measures of seventy-three spectrum plates of β Scorpii and deduce an orbit. They confirm Dr. Slipher's statement that the H and K calcium lines do not share in the large oscillations shown by the other lines. As in δ Orionis and ο Persei, the velocity shown by these lines is approximately the velocity of the centre of mass of the system, thus indicating that the absorbing material producing the lines is really part of the system. Other notable features are the great eccentricity of the orbit, excessive for a star of the B type with so short a period, and the comparatively large masses of the components.

THE AXIS AND COMPRESSION OF MARS.—Including observations up to 1909, Dr. Struve has determined the axis of Mars, from the shifts of the orbital planes of the satellites, which confirm similar values found by him in 1896. He finds the obliquity of the planet's equator to the orbit to be 25° 10·2′, a value which, as Dr. Crommelin points out in the current number of *The Observatory*, is about the mean of previous determinations from observations of the snowcaps; Herschel gave 28°, while Prof. Lowell's latest value was 23°. The compression of the planet is given as 1/190·4, and the mass as 1/3,090,000, the same as formerly adopted. The daily angular motion of Phobos is 1128·844°, and of Deimos 285·162°.

OBSERVATIONS OF NOVA GEMINORUM NO. 2.

MANY observations of the nova, of which we give a selection below, are reported in No. 4563 of the *Astronomische Nachrichten*. The observations of magnitude are not very accordant, but they indicate that the nova was probably discovered before it reached its greatest brightness.

Prof. Wolf reports that there was a star brighter than magnitude 12·0 in the position of the nova on March 7, while two Harvard photographs showing eleventh-magnitude stars do not show the nova on March 10; but two plates taken on March 11 show it as a fifth-magnitude star. A plate taken by Dr. Kopff in 1909 shows the image of a fifteenth-magnitude star which is probably identical with the nova. Some of the magnitude estimations are given in the following table:—

Date	G.M.T.	Magnitude	System	Observer
	h. m.			
March 13	7 45	4·1	Harvard Revised	Strömgren
14	10 30	3·6	—	Wirtz
15	6 30	4·18	P.D.	Guthnick
15	9 30	4·31	,,	Freundlich
15	11 42	4·5	,,	Guthnick
16	7 15	5·42	Harvard Revised	Felix de Roy
17	8 49	5·37	P.D.	Graff
20	7 29	5·34	,,	,,
20	11 49	5·51	,,	,,
24	—	4·6±	—	Nijland
24	—	5·0±	—	Easton
26	—	5·5	—	,,
27	—	6·5	—	Easton; Nijland

In communicating the last four values, Dr. C. Easton directs attention to the oscillations of brightness indicated by the recrudescence observed on March 24, when he observed at Amsterdam and Prof. Nijland at Utrecht; both observers were hampered by clouds and moonlight.

M. de Roy estimated the colour to be orange-yellow, 5·5 c. on Osthoff's scale, as seen in an 8-in. reflector, and Dr. Hartwig gives it as reddish.

Prof. Wolf states that the spectrum on March 15 was similar to that of Nova Aurigæ, but on March 17 it was more like that of Nova Lacertæ during the period January 6–14, 1911. On March 14 Herren Struve, Guthnick, and Freundlich saw broad absorption lines at Hα and Hβ, and the last-named suspected bright condensations in several places; a bright line in the yellow is given as probably D or D_3. Prof. Hertzsprung saw the H and K absorption lines doubled on March 15, the one part being very narrow and in its normal position, the other being about 7 A.U. broad, and, in the mean, displaced by an amount corresponding to −650 kms. per sec. A large number of fine absorption lines similar to those in a spectrum of F type were also seen. Prof. Schwarzschild states that the observations made with the Potsdam spectrograph, No. 1, on March 15, showed a number of absorption lines about 1 A.U. in breadth. Among these are well-defined lines of the spark spectrum of titanium, indicating by their displacements a radial velocity, referred to the sun, of −540 kms. per sec. On March 17 the displacements of these lines indicated a motion of −350 kms. per sec. in the line of sight. Observations on March 17, 18, and 19 indicated that the continuous spectrum was becoming weaker relatively to the bright bands.

Some interesting spectroscopic results secured by M.M. Hamy and Millochau at the Paris Observatory are published in No. 13 of the *Comptes rendus* (March 25). Two spectrographs were employed, one with a slit giving a spectrum 40 mm. long from Hβ to K, the other an ultra-violet prismatic camera giving the same length of spectrum between λ500 and λ300. On the plates secured with the latter the continuous spectrum is seen easily to extend to λ315, a fact which is accepted as showing the extremely high temperature of the light-source.

A large proportion of the total radiation from the star is shown to be concentrated in the bright hydrogen lines, which are about 20 A.U. in width, and become more and more diffuse towards the violet end of the spectrum. Hβ is divided into three equal parts and a similar division is suspected in Hγ; Hδ, Hε, Hζ, and Hθ are also shown. These broad, bright hydrogen lines are strongly displaced towards the red by an amount equivalent in Hβ, Hγ, and Hε to 3 A.U., and each is accompanied by a broad absorption band on the more refrangible side; the dark hydrogen bands are, as usual, considerably displaced, and have fine, bright reversals running down their centres. The displacements are equivalent to those that would be produced by a radial velocity of the order of −1300 kms. per sec. in the atmosphere of hydrogen, which produces the double reversals. The authors, however, attribute the broadening and the displacement of the lines to the enormous pressures which might be produced in the cataclysm following the impact of a star and a nebula, such as was outlined in Seeliger's theory.

Many apparently bright lines occur between λ470 and λ390, but the authors are not sure that these are not merely the interspaces between feeble absorption bands; they do, however, affirm the existence of a fine absorption band at λ394. Between λ370 and λ315, only continuous spectrum is seen, and the spectrum as a whole is similar to those of Novæ Aurigæ (1892), Persei (1901), and Geminorum (1903).