

OUR ASTRONOMICAL COLUMN.

PROBABLE NEW VARIABLES.—Mr. John Tebbutt calls attention in the *Observatory* for November to the double star  $\sigma 256$ , one of the components of which appears to be variable; for during the occultation of the star on August 22 the preceding component appeared very distinctly the brighter of the two, whilst Crossley and Gledhill, in their "Hand-book of Double Stars," regard this star as the companion. Struve was apparently the first to draw attention to the probable variability of this star, for whilst he usually estimated the preceding star as the brighter by half a magnitude, Dembowski recorded it as being the fainter by that amount.

Dr. Bauschinger (*Astr. Nach.* No. 2810), finds that a star in Libra, Lam<sub>2</sub> 1875, Munich Zones 695—place for 1855<sup>o</sup>, R.A. 15h. 4m. 1<sup>s</sup>., Decl. 5° 27' 6" S.—is also probably variable. Lamont gives the star as of the eighth magnitude; Dr. Bauschinger finds it 9<sup>o</sup> 2 m.; it is wanting in the southern Durchmusterung. Dr. Schönfeld writes that he observed the star on two, if not three occasions; once as 10 m. and once as 12 m. It should therefore be added in the *Bonn. Beob.* vol. viii., after -5° No. 4028, as:—

"Var, 15h. 4m. 2<sup>s</sup>., 5° 27' 5 M."

NAMES OF MINOR PLANETS.—Minor Planet No. 268 has received the name of Adorea; No. 270 that of Anahita.

THE SPECTRA OF OXYGEN AND CARBON COMPARED WITH THAT OF THE SUN.—Prof. Trowbridge and Hutchins have presented to the American Academy of Arts and Sciences a paper on the spectra of oxygen and carbon as compared with that of the sun. In the case of the former element, Dr. Henry Draper had convinced himself that there were bright lines in the solar spectrum corresponding to the bright lines of oxygen, whilst his brother, Prof. J. C. Draper, had identified the oxygen with faint dark lines, but the present experimenters conclude that "so far as concerns the spark spectrum in air and the solar spectrum from wave-lengths 3749<sup>o</sup> 8 to 5033<sup>o</sup> 85 they can safely affirm that there is no physical connection between them." They "have photographed the sun's spectrum every day that the sun has shone for nearly five months, without finding a line that could with certainty be pronounced brighter than its neighbours"; the powerful dispersion given by the large concave Rowland grating employed by Messrs. Trowbridge and Hutchins causing the "bright bands to vanish," which Dr. H. Draper thought he had discovered, and which seemed conspicuous with the dispersion he used, whilst it showed at the same time that there was no real correspondence between the oxygen lines and the dark lines Prof. J. C. Draper had identified with them. Lack of sufficient instrumental power had led both of the two earlier observers astray.

With regard to carbon, Messrs. Trowbridge and Hutchins are of opinion "that the fluted spectrum of carbon is an example of the reversal of the lines of a vapour in its own vapour," and they find a striking coincidence in many cases between the spaces separating the fine bright lines of the flutings and dark lines in the solar spectrum, twenty-eight such coincidences being traced within the limit of ten wave-lengths in the fluting at wave-length 3883<sup>o</sup> 7. Their hypothesis as to the origin of the flutings leads them "to conclude that, at the point of the sun's atmosphere where the carbon is volatilized so as to produce the peculiar arrangement of reversals observed, the temperature of the sun approximates to that of the voltaic arc."

OLBERS' COMET, 1887.—The following ephemeris for Berlin midnight for this object is in continuation of that given in NATURE, vol. xxxvi. p. 588, and vol. xxxvii. p. 37, and is by Herr Tetens (*Astr. Nach.*, No. 2813):—

1887.	R.A.	Decl.	Log r.	Log Δ.	Bright- ness.
	h. m. s.	° ' "			
Dec. 1	15 26 36	7 10' 9 N.	0 <sup>o</sup> 1594	0 <sup>o</sup> 3354	0 <sup>o</sup> 84
3	15 32 7	6 34' 7			
5	15 37 31	5 59' 5	0 <sup>o</sup> 1692	0 <sup>o</sup> 3417	0 <sup>o</sup> 78
7	15 42 49	5 25' 1			
9	15 48 0	4 51' 6	0 <sup>o</sup> 1790	0 <sup>o</sup> 3478	0 <sup>o</sup> 73
11	15 53 4	4 19' 1			
13	15 58 2	3 47' 5	0 <sup>o</sup> 1890	0 <sup>o</sup> 3537	0 <sup>o</sup> 68
15	16 2 54	3 16' 9			
17	16 7 41	2 47' 2 N.	0 <sup>o</sup> 1990	0 <sup>o</sup> 3593	0 <sup>o</sup> 63

The brightness on August 27 is taken as unity.

A Vienna observation of October 21 gives the error of the ephemeris as R.A. + 3s. and Decl. + 0<sup>o</sup> 2, and this will probably slowly increase.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 DECEMBER 4-10.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on December 4

Sun rises, 7h. 50m.; souths, 11h. 50m. 19' 6s.; sets, 15h. 51m.; right asc. on meridian, 16h. 42' 2m.; decl. 22° 15' S. Sidereal Time at Sunset, 20h. 44m.  
Moon (at Last Quarter on December 8, 3h.) rises, 18h. 39m.\*; souths, 2h. 44m.; sets, 10h. 44m.; right asc. on meridian, 7h. 34' 0m.; decl. 20° 0' N.

Planet.	Rises.		Souths.		Sets.		Right asc. and declination on meridian.	
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	
Mercury..	5 46	10 27	15 8	15 18	19 9	15 49	S.	
Venus ...	3 20	8 45	14 10	13 36	7	36	S.	
Mars ...	0 53	7 8	13 23	11 58	9	2 8	N.	
Jupiter ...	5 56	10 27	14 58	15 18	9	17 25	S.	
Saturn ...	19 57*	3 45	11 33	8 35	1	19 6	N.	
Uranus ...	2 35	8 9	13 43	13 0	6	5 46	S.	
Neptune..	15 11	22 52	6 33*	3 45	8	18 5	N.	

\* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

Occultation of Star by the Moon (visible at Greenwich).

Dec.	Star.	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image.
	h.		h. m.	h. m.	° ' "
6 ...	7 Leonis ...	6½	5 18	6 27	59 30 <sup>o</sup>
Dec. 4 ...	11 ...				
5 ...	5 ...				
5 ...	8 ...				
9 ...	5 ...				

Saturn, December 4.—Outer major axis of outer ring = 44" 3; outer minor axis of outer ring = 14" 2; southern surface visible.

Variable Stars.

Star.	R.A.	Decl.	h. m.
	h. m.	° ' "	h. m.
U Cephei ...	0 52' 3	81 16 N.	7, 0 46 m
R Sculptoris ...	1 21' 8	33 8 S.	10, M
Algol ...	3 0' 8	40 31 N.	6, 2 46 m
λ Tauri ...	3 54' 4	12 10 N.	8, 23 35 m
S Orionis ...	5 23' 4	4 47 S.	7, 2 17 m
ζ Geminorum ...	6 57' 4	20 44 N.	7, M
R Canis Majoris ...	7 14' 3	16 11 S.	9, 19 0 m
T Cancri ...	8 50' 2	20 17 N.	8, 20 56 m
S Virginis ...	13 27' 1	6 37 S.	10, 0 12 m
U Corone ...	15 13' 6	32 4 N.	6, M
β Lyræ ...	18 45' 9	33 14 N.	7, 23 4 m
S Vulpeculæ ...	19 43' 8	27 0 N.	5, 4 0 m
Y Cygni ...	20 46' 8	34 10 N.	7, M
R Vulpeculæ ...	20 59' 4	23 22 N.	5, 22 23 m
δ Cygni ...	22 25' 0	57 50 N.	8, 22 17 m

M signifies maximum; m minimum.

Meteor-Showers.

	R.A.	Decl.	
	h. m.	° ' "	
Near γ Persei ...	44	56 N.	Very slow; faint.
The Taurids II. ...	80	23 N.	Slow; bright.
The Geminids ...	107	33 N.	Swift; short.
Near δ Geminorum ...	110	24 N.	Rather swift.
Near π Leonis ...	145	8 N.	Swift; streaks.
Near β Ursæ Majoris.	162	58 N.	Very swift; streaks.