that the most probable period is one of 1d. 11h. 59m., or if not that, 20h. 34m., or possibly 18h. 6m. The following table shows that the shorter the period of the variable, the higher is the ratio which the period of oscillation bears to it. In the present star the oscillation probably occupies about six hours; a period so great as three days or much shorter than one day would make it, therefore, an exception to the rule followed by the other seven stars of the same order.

Star	Period h.	Oscillation h.	Ratio
U Ophiuchi ...	20·13	5·0	0·248
δ Libræ ..	55·85	12·0	0·214
U Cephei ...	59·82	10·0	0·167
Algol	68·81	9·15	0·134
U Coronæ ...	82·85	9·75	0·118
λ Tauri ...	94·87	10·0	0·105
S Cancri ...	227·63	21·5	0·094

The variable was discovered by Mr. Chandler and not by Dr. Gould as at first reported.

Mr. Espin, in Circular No. 12 of the Liverpool Astronomical Society, notes the variability of a star 0m. 35s. *p* and 0° 8′ *n* of θ^2 Tauri. It is probably a variable of long period ranging from 9 m. ± to below 12 m. Its place for 1885·0 is R.A. 4h. 21m. 25s., Decl. 15° 50′·7 N.

THE WASHINGTON OBSERVATORY.—The Annual Report of the U.S. Naval Observatory, dated October 30, 1886, has recently been issued. Commodore G. E. Belknap, who was Superintendent of the Observatory at the date of the last Report, retired from that post on June 7, and was succeeded by Commander Allan D. Brown, who therefore is the writer of the Report now before us. In connection with the Chronometer and Time-Service Department, under Lieut. S. C. Paine, it is remarked that the time-service continues to increase in popularity, and its usefulness is daily becoming more apparent to the public. The time-balls that have been established have been much appreciated, and are of great value to the shipping and commercial interests. Much attention appears also to have been given to the chronometer trials, it evidently being the desire of the Observatory to afford makers every assistance in its power in obtaining data that will tend to the improvement of chronometers. The 26-inch refractor, in charge of Prof. Asaph Hall, has been used in observations of satellites, of double stars, and of Saturn. Observations of stellar parallax have also been made. The reduction of the observations of Iapetus and of the six inner satellites of Saturn, as well as those for stellar parallax, have been completed, and the results published. The transit-circle has been employed in observations of stars of the American ephemeris, of the sun, moon, and planets, and such miscellaneous stars as were necessary to complete the data for the proposed transit-circle Catalogue. The whole number of observations since the last Report has been 5180. The reductions have also been proceeded with as rapidly as possible. The instrument remains in charge of Prof. J. R. Eastman. Photographs of the sun have been taken with the photo-heliographic apparatus lately belonging to the Transit of Venus Commission, whenever practicable. The work was commenced on January 11, 1886; and up to and including September 30, 1886, there have been obtained ninety-eight negatives showing spots on the sun's surface. Hitherto no photographs have been taken, except when the sun showed spots on his disk, and then one only near noon. This work has been intrusted to Ensign A. G. Winterhalter, who hopes that in the future the number of photographs in a given period will be considerably increased, better arrangements having been made for securing them between 10 a.m. and 2 p.m.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 JANUARY 30—FEBRUARY 5

(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 January 30

Sun rises, 7h. 44m.; souths, 12h. 13m. 31·8s.; sets, 16h. 43m.; decl. on meridian, 17° 39′ S.: Sidereal Time at Sunset, 1h. 21m.

Moon (at First Quarter on February 1) rises, 10h. 23m.; souths, 16h. 50m.; sets, 23h. 27m.; decl. on meridian, 4° 40′ N.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian ° ′
Mercury ...	7 46 ...	11 55 ...	16 4 ...	20 56 S.
Venus	8 25 ...	13 11 ...	17 57 ...	14 51 S.
Mars	8 31 ...	13 29 ...	18 27 ...	12 40 S.
Jupiter... ...	0 35 ...	5 37 ...	10 39 ...	12 3 S.
Saturn... ...	14 29 ...	22 36 ...	6 43* ...	22 11 N.

* Indicates that the setting is that of the following morning.

Occultations of Stars by the Moon (visible at Greenwich)

Jan.	Star	Mag.	Disap. h. m.	Reap. h. m.	Corresponding angles from vertex to right for inverted image ° °
30 ...	ν Piscium ...	4½ ...	21 24 ...	22 15 ...	185 289
Feb. 3 ...	48 Tauri	6 ...	1 15 ...	2 9 ...	150 300
3 ...	B.A.C. 1526 ...	6 ...	18 26 ...	19 24 ...	122 233

Variable Stars

Star	R.A. h. m.	Decl. ° ′			h. m.	
R Andromedæ ...	0 18·1 ...	37 57	N. ...	Jan. 31,	0 0	*m*
U Cephei	0 52·3 ...	81 16	N. ...	,, 31,	22 0	*m*
				Feb. 5,	21 39	*m*
Algol	3 0·8 ...	40 31	N. ...	,, 5,	4 23	*m*
ζ Geminorum ...	6 57·4 ...	20 44	N. ...	,, 3,	0 0	*M*
δ Libræ	14 54·9 ...	8 4	S. ...	,, 3,	1 49	*m*
S Serpentis... ...	15 16·4 ...	14 43	N. ...	,, 4,		*M*
U Ophiuchi... ...	17 10·8 ...	1 20	N. ...	Jan. 30,	4 16	*m*
		and at intervals of			20 8	
β Lyræ... ...	18 45·9 ...	33 14	N. ...	Feb. 4,	19 0	m_2
δ Cephei ...	22 25·0 ...	57 50	N. ...	,, 4,	1 0	*M*

M signifies maximum; *m* minimum; m_2 secondary minimum.

GEOGRAPHICAL NOTES

IN connection with Major Macgregor's paper on his journey from Upper Assam to the Irrawadi, read at a recent meeting of the Royal Geographical Society, and printed in the new number of the Proceedings, Dr. G. Watt made some valuable remarks on his own observations in the Manipur district. Manipur is a small valley surrounded by mountain-ranges, and in this valley the rainfall was found to be only about 39 inches, but seventeen miles off, in the mountains which formed the north-east ranges, the rainfall was as much as 120 inches, and towards the Naga country to the north it became greater and greater in certain limited tracts. In the Khasia Hills 600 inches might fall in one place, and twenty miles off only 50 inches. Nothing in Manipur struck Dr. Watt so much, as a botanist, as the remarkable transitions of vegetation in that small region. Dr. Watt gathered twelve or more species of oaks, many of which were new to science, and ten or twelve species of rhododendrons, in Manipur alone. The *Rhododendron Falconeri*, found in the Naga Hills by Sir Joseph Hooker, is nowhere met with in the immense tract between the Naga Hills and Sikkim. This and the epiphytic *R. Dalhousiæ*, which grows on a hill thirty miles north of Darjeeling, Dr. Watt found in the Naga Hills at an altitude of 6000 to 8000 feet, and these rhododendrons never occur in Sikkim below 10,000 to 13,000 feet. There were many instances of plants falling in their altitude as the traveller passed to the east and south-east from Sikkim, until at Moulmein a rhododendron was found growing near the sea, a circumstance which was not met with in any other part of Asia. There is something in that region which, apart from pure geography, is of vital interest. Sarameti, which is under 13,000 feet high, the natives said, had snow all the year round, whereas on the Himalayas the lowest point at which snow occurs is 17,000 feet. In Manipur, the whole valley, 3000 feet high, was covered with hoar-frost in December. Dr. Watt thought this was a point that should be thoroughly investigated: what is the cause of this falling in altitude in the vegetation? General Strachey, who was in the chair, considered that the peculiarities of the vegetation of Manipur compared with Assam were connected with the evident lowering of temperature indicated by the low snow-line. There could be no doubt that the warm currents of air coming up the valleys of the Irrawadi and the Salween and meeting the snowy mountains to the north produced an enormous precipitation of rain, which during winter fell as snow. The consequence seemed to be that there was snow there at a very much lower level than in the mountains further to the north. That an immense quantity of rain fell in the upper portions of the valley of the