of the fish with which it made the British public familiar were hatched from ova of foreign fish. There were various Transatlantic forms; and fishes indigenous to India, China, Brazil, Austria, and many other countries were exhibited. Considering the fact that this Aquarium was the only one in London worthy of note, naturalists and the public have good reason to regret that it has been abolished.

MR. Z. NUTTALL, of the Peabody Museum, Cambridge, Mass., has been led to some interesting results by the study of the Mexican codices. Familiarity with certain phonetic symbols of frequent recurrence in these picture-writings enabled him to perceive that identical symbols are reproduced on the so-called Calendar Stone, the Sacrificial Stone, and other equally well-known Mexican monoliths. The Calendar Stone was, he maintains, the Market Stone of the city of Mexico, and he thinks that from the fixed market days recorded on it the Mexican calendar system may have sprung. The so-called Sacrificial Stone seems to him to have been a Law Stone, recording the periodical collection of certain tributes paid by subjugated tribes, and by others whose obligation it was to contribute to the common wealth of Mexico. Mr. Nuttall expresses his belief that many of the large stone receptacles which are generally called "vessels for containing the hearts and blood of human victims," were in reality standard measures kept for reference in the market place.

WE regret to hear of the death of Dr. Julius Lüttich, the well-known astronomer, who died in Rome on January 3; also of Prof. Jean Louis Trasenster, who died on the same day. M. Trasenster was Professor of Engineering and Mining at the Liége University.

THE Report of the Kew Committee for 1886, lately published, shows that the well-known work of the Kew Observatory has been actively carried on during the year. To particularise in certain subjects, it may be mentioned that in the magnetic observations four notable magnetic disturbances were recorded, occurring severally in the months of January, March, July, and October, and that the diurnal range of the declination for the summer and winter seasons, as well as the whole year, is given in a table in the Appendix. In solar observations the results of sketches of sunspots in continuation of Schwabe's enumeration are also recorded in the Appendix. The adoption of a new graphic process for determining cloud heights and motions, devised by Prof. Stokes, has been very satisfactory in saving computation when reducing the photographic pictures. Whilst thus adding its valuable yearly contributions to science, the Observatory is becoming more and more useful in results of immediate utility to the general public. In this respect the rating of watches is a matter of growing convenience to those who require a good time-keeper accompanied with a trustworthy certificate as to the performance of the watch they are about to purchase. Chronometers are also now rated here, and from the 35 days' period of trial in a range of 30° of temperature to which these instruments are subjected by the staff of the Observatory, there is every reason to believe in the ascertained rates. It is encouraging to note that increasing good work points to the necessity for enlarging the existing accommodation afforded by the buildings.

WE have received the third volume of the Proceedings and Transactions of the Royal Society of Canada. It relates to the year 1885. Among the scientific articles may be mentioned "The Artistic Faculty in Aboriginal Races" and "Palæolithic Dexterity," by Dr. Daniel Wilson; "A Natural System in Mineralogy, with a Classification of Native Silicates," by Dr. T. Sterry Hunt; "The Mesozoic Floras of the Rocky Mountain Region," by Sir W. Dawson; "Illustrations of the Fauna of the St. John Group, continued," by Mr. G. F. Matthew; "Catalogue of Canadian Butterflies, with Notes on their Distribution," by Mr. W. Saunders; and "The Skull and Auditory Organ of the Siluroid Hypophthalmus," by Mr. R. Ramsay Wright.

AN elaborate paper on "The Right Hand and Left-Handedness" was lately read before the Royal Society of Canada by Dr. Daniel Wilson, President of University College, Toronto. His final conclusion on this difficult subject, which he has repeatedly discussed from various points of view, is, that left-handedness is due to an exceptional development of the right hemisphere of the brain. Dr. Wilson, who is himself left-handed, concludes his paper with the expression of a hope that after his death his own brain may be "turned to account for the little further service of settling this physiological puzzle." "If my ideas are correct," he says, "I anticipate as the result of its examination that the right hemisphere will not only be found to be heavier than the left, but that it will probably be marked by a noticeable difference in the number and arrangement of the convolutions."

THE additions to the Zoological Society's Gardens during the past week include a White-whiskered Swine (*Sus leucomystox* ♀) from Loochoo Islands, presented by Mr. H. Pryer, C.M.Z.S; two Blackiston's Eagle Owls (*Bubo blackistoni*) from Yesso, Japan, presented by Mr. J. H. Leech, F.Z.S.; two Schlegel's Doves (*Chalcopeliæ puella*) from West Africa, presented by Mr. H. C. Donovan; a Macaque Monkey (*Macacus cynomolgus*) from India, a Suricate (*Suricata tetradactyla*) from South Africa, deposited; a Red Kangaroo (*Macropus rufus* ♀), a Yellow-footed Kangaroo (*Petrogale xanthopus* ♀), born in the Gardens.

OUR ASTRONOMICAL COLUMN

THREE NEW COMETS.—The discovery of a great comet is telegraphed from several southern Observatories. So far as is yet known it was discovered by Mr. Thome at Cordoba on January 18. It was then situated in the constellation Grus; apparently not far from γ Gruis. On the following evening the tail only was seen at Melbourne, projecting some 30° above the south-western horizon. On January 20 it was remarked at Adelaide; here again the tail only was seen. In its physical appearance the comet strongly recalls the great southern comet of 1880, being long, narrow, and straight. It is not brilliant, though readily visible to the naked eye in the twilight. The tail was traced as far as α Toucani. It is expected that the comet will become very brilliant. The nucleus was observed at Adelaide and Melbourne on January 23. The Melbourne observation is as follows:—January 23d. 8h. 0m., R.A. 21h. 20m. 28s.; daily motion + 7m. 44s., Decl. 44° 17′ S., daily motion + 51′.

Another comet was discovered on January 22 by Mr. W. H. Brooks, of the Red House Observatory, Phelps, New York. Its place on that day at 6h. 54m. was R.A. 18h. 0m., Decl. 71° N. It was faint, and was moving slowly in an easterly direction. A third comet has been discovered by Mr. E. E. Barnard, Nashville, Tennessee; and observed at Harvard College as follows:—January 24d. 17h. 55·7m., R.A. 19h. 10m. 17·4s., daily motion + 2m. 36s., Decl. 25° 57′ 45″ N., daily motion − 0° 35′. The comet is faint.

NEW VARIABLES.—Mr. S. C Chandler, Jun., writes in Gould's *Astronomical Journal*, No. 149, to state that the period of the new variable of the Algol type, D.M. + 34° No. 4181, the discovery of which we announced last week (p. 282), is not yet precisely known. It is either 5·997d. or some aliquot part thereof, but not either the third or fifth part. The approximate elements supplied by Mr. Chandler are as follows:—

$$1886 \text{ December } 9{\cdot}458\text{d. G.M.T.} + \left(\frac{5{\cdot}997\text{d.}}{n}\,\text{E}\right),$$

where n can be neither 3 nor 5. The period may therefore be about three days, one day and a half, or a shorter period still. An examination of the relation which the duration of the oscillation in the light of the other stars of the type bears to the whole period leads Mr. Chandler to conclude

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