Rhinoceros (*Rhinoceros lasiotus* ♂) from India, two Punjaub Wild Sheep (*Ovis cycloceros*) from North-West India, received in exchange.

OUR ASTRONOMICAL COLUMN

THE INFLUENCE OF PHASE ON THE BRIGHTNESS OF THE MINOR PLANETS.—Dr. G. Müller gives an interesting discussion in the *Astronomische Nachrichten*, Nos. 2724-2725, of the variations in brightness of seven of the minor planets. The determinations of the magnitudes of these objects were made by means of a photometer, on Zollner's principle, attached either to the Steinheil telescope of the Potsdam Observatory, of aperture 135 mm. aperture, or to the Grubb equatorial of 207 mm. aperture. The result of these observations seems to show that there is a real connection between the phase of these planets and their apparent brightness, and that Lambert's law of phase brightness does not apply to them. Dr. Müller further divides the planets he has observed into two classes. In the first class, which embraces Vesta, Iris, Massilia, and Amphitrite, the changes in brightness are only perceptible as the planet approaches opposition; in the second, which contains Ceres, Pallas, and Irene, the changes in brightness seem to be co-extensive with the changes of phase. The planets of the first group thus correspond in their behaviour to the planet Mars, and Dr. Müller thinks we may fairly infer therefrom a similarity in their physical condition to that of the ruddy planet. The planets of the second class would appear, on the other hand, to give a light curve similar to that given by our moon, or rather perhaps by Mercury; it is therefore not improbable that they bear more resemblance in their physical constitution to that body.

COMET FABRY.—The following ephemeris by Dr. S. Oppenheim is taken from the *Astronomische Nachrichten*, No. 2722:—

For Berlin Midnight

1886	R.A. h. m. s.	Decl. ° ′	Log *r*	Log Δ	Brightness
May 3	5 1 16	7 33·1 S.	9·9351	9·2358	381·4
5	6 16 8	22 59·4	9·9617	9·4446	195·2
11	7 3 53	30 30·4	9·9877	9·5698	97·3
15	7 34 43	34 18·8	0·0130	9·6758	53·2
19	7 55 56	36 29 6	0·0373	9·7632	31·8
23	8 11 35	37 53·6	0·0606	9·8364	20·4
27	8 23 52	38 53·2	0·0828	9·8992	13·8
31	8 34 0	39 39·2 S.	0·1041	9·9528	9·8

The brightness on 1885 December 1 is taken as unity.

BARNARD'S COMET.—The following ephemeris by Dr. H. Oppenheim (*Astr. Nachr.*, No. 2714) is in continuation of that given in NATURE for April 1, p. 518:—

Ephemeris for Berlin Midnight

1886	R.A. h. m. s.	Decl. ° ′	Log *r*	Log Δ	Brightness
May 6	1 41 34	39 23·5 N.	9·6858	9·8894	155
10	1 50 59	36 42·5	9·7087	9·8125	199
14	2 8 29	31 42·6	9·7429	9·7266	253
18	2 35 41	23 16·9	9·7828	9·6374	318
22	3 13 3	10 16·3 N.	9·8242	9·5619	371
26	3 58 59	6 32·5 S.	9·8648	9·5291	359

The brightness on 1885 December 5 is taken as unity.

THE APPLICATION OF PHOTOGRAPHY TO ASTRONOMY.—In Appendix III. to the "Washington Observations for 1882," Prof. Harkness, U.S N., commenting on the difficulty of preventing the solar rays from disturbing the adjustments of a meridian instrument employed in observing the sun, points out that photography seems to afford an escape from the difficulty. He suggests that a transit-circle might be so constructed that its eye-piece could be readily removed, and a sensitive photographic plate inserted just behind its wire system. Then with the eye-piece in position stars can be observed, and the instrumental constants determined in the usual way; while at noon a photographic plate can be inserted, and an instantaneous exposure will suffice to give an image of the sun with the transit and declination wires of the instrument imprinted upon it. The position of the sun's centre relatively to these wires having been measured, this, together with the instrumental constants, the circle-reading and the sidereal time of exposure will give an exact determination of the sun's right ascension and declination. As the instruments will be exposed to the sun's rays only for a few thousandths of a second, no disturbance of its constants can, Prof. Harkness thinks, arise from that cause; and the results, in his opinion, would probably be superior in accuracy to any hitherto obtained by the usual methods.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1886 MAY 9-15

(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 May 9

Sun rises, 4h. 20m.; souths, 11h. 56m. 16·3s.; sets, 19h. 33m.; decl. on meridian, 17° 25′ N.: Sidereal Time at Sunset, 10h. 43m.

Moon (at First Quarter on May 11) rises, 9h. 12m.; souths, 16h. 58m.; sets, 0h. 36m.*; decl. on meridian, 16° 37′ N.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian ° ′
Mercury ...	3 46 ...	10 19 ...	16 52 ...	5 51 N.
Venus ...	3 0 ...	9 4 ...	15 8 ...	0 0
Mars ...	12 40 ...	19 34 ...	2 28* ...	9 52 N.
Jupiter ...	14 21 ...	20 39 ...	2 57* ...	2 50 N.
Saturn ...	7 1 ...	15 13 ...	23 25 ...	22 50 N.

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

Occultation of Star by the Moon (visible at Greenwich)

May	Star	Mag.	Disap. h. m.	Reap. h. m.	Corresponding angles from vertex to right for inverted image ° °
15	θ Virginis	4½	2 42	3 36	93 309

May h.
13 ... 16 ... Jupiter in conjunction with and 0° 25′ north of the Moon.

Variable Stars

Star	R.A. h. m.	Decl. ° ′		h. m.	
ζ Geminorum ...	6 57·4	20 44 N.	May	9, 21 30	*m*
			,,	14, 21 40	*M*
S Cancri	8 37·4	19 27 N.	,,	12, 22 56	*m*
R Ursæ Majoris ...	10 36·6	69 22 N.	,,	12,	*M*
δ Libræ	14 54·9	8 4 S.	,,	9, 2 30	*m*
U Coronæ	15 13·6	32 4 N.	,,	13, 21 17	*m*
R Draconis	16 32·4	67 3 N.	,,	10,	*m*
U Ophiuchi	17 10·8	1 20 N.	,,	10, 11 58	*m*
		and at intervals of 20		8	
X Sagittarii	17 40·4	27 47 S.	May	12, 2 20	*m*
			,,	15, 0 0	*M*
W Sagittarii ...	17 57·8	29 35 S.	,,	11, 2 30	*m*
R Lyræ	18 51·9	43 48 N.	,,	13,	*M*
T Aquarii	20 43·9	5 34 S.	,,	15,	*m*
δ Cephei	22 24·9	57 50 N.	,,	10, 21 30	*m*

M signifies maximum; *m* minimum.

Meteor Showers

Amongst the secondary radiants active at this time are the following:—From Lynx, R.A. 123°, Decl. 40° N.; near δ Libræ, R.A. 223°, Decl. 10° S.; from Delphinus, R.A. 304°, Decl. 7° N.; near ζ Cygni, R.A. 320°, Decl. 18° N.; near κ Andromedæ, R.A. 354°, Decl. 41° N.

BIOLOGICAL NOTES

THE HYMENOPTERA OF THE HAWAIIAN ISLANDS.—In the *Proceedings* of the Literary and Scientific Society of Manchester (vol. xxv. pp. 123-183) is a valuable contribution on the Hymenopterous insect-fauna of the Hawaiian Islands, by the Rev. T. Blackburn, B.A., who resided there for many years, with a short introduction and annotations by Mr. P. Cameron. Eighty-four species are catalogued or described, but Mr. Blackburn says he has taken over 100. The greater part of the species appear to be strictly autochthonous. Of the *Anthophila* (or bees) there are 14 species (excluding the introduced honey-bee), and it is curious that 10 of these belong to 1 genus—*Prosopis*. Of the *Fossores* there are 35 species, and here again there is a paucity of genera, for 19 are included in *Odynerus* and 11 in *Crabro*. Of *Heterogyna* (ants) are only 10 species; and about 25 species of the various parasitic and hyper-parasitic groups. No indication of any of the phytophagous forms occurs in the paper. Before Mr. Blackburn went to the Hawaiian Islands the insect-fauna was almost unknown, so far as what may be termed the