

thus appears that the figure of about three feet in a century, which was deduced from former observations, cannot be very far from the truth. As to local anomalies, they remain still unexplained.

The additions to the Zoological Society's Gardens during the past week include two Yellow-fronted Tanagers (*Euphonia flavifrons*) from Dominica, presented by Mrs. Herbert; two Manx Shearwaters (*Puffinus anglorum*) from the Scilly Islands, presented by Mr. F. Hensman; an Ocelot (*Felis pardalis*) from South America, deposited; four Black-tailed Godwits (*Limosa egocephala*), European, purchased; two Indian Muntjacs (*Cervulus muntjac* ♂ ♀) from India, received in exchange; a Persian Gazelle (*Gazella subgutterosa* ♀), two Bennett's Wallabys (*Halmaturus bennetti* ♀ ♀), a Hog Deer (*Cervus porcinus* ♂), a Collared Fruit Bat (*Cynonycteris collaris*), two Grey Wagtails (*Motacilla melanope*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

COMET 1888 e (BARNARD, SEPTEMBER 2).—The following ephemeris for Berlin midnight for this object is in continuation of that given in NATURE, vol. xxxix. p. 616:—

1889.	R.A.	Decl.	Log r.	Log Δ.	Bright-ness.
	h. m. s.				
June 1 ...	22 54 22	... 2 39'9 N...	0'3730	... 0'3441	... 2'1
5 ...	22 47 38	... 2 40'5	... 0'3786	... 0'3317	... 2'1
9 ...	22 40 4	... 2 38'1	... 0'3842	... 0'3193	... 2'2
13 ...	22 31 38	... 2 32'5	... 0'3898	... 0'3070	... 2'3
17 ...	22 22 16	... 2 23'6	... 0'3954	... 0'2952	... 2'4
21 ...	22 11 57	... 2 10'7 N...	0'4010	... 0'2839	... 2'4

The brightness at discovery is taken as unity.

THE MOTION OF STARS IN THE LINE OF SIGHT.—Prof. H. C. Vogel, noting the difficulty which has been experienced at the Greenwich and Rugby Observatories in making eye-observations of the displacement of the lines in stellar spectra due to the approach or recession of the stars, has endeavoured to solve the problem by means of photography, and has met with very considerable success. The atmospheric tremors, which are so baffling and often misleading to direct eye-observation, counteract each other and produce little or no effect on the photograph; and the feebleness of the light of a star when spread out into a long spectrum is overcome by a lengthened exposure. Prof. Vogel gives the following results (in German miles per second) for five stars, of which four have been observed at Greenwich:—

Star.	Vogel.	Greenwich.
Capella ...	+3'5	... +4'8
Aldebaran ...	+6'5	... +6'8
Polaris ...	-3'5	... not observed
α Persei ...	-1'5	... -4'8
Procyon ...	-1'5	... +0'8

The Greenwich observations for 1888, nearly contemporaneous therefore with the Potsdam observations, give the motion of Procyon as -0'8. The agreement of the individual photographs is very gratifying, and is much closer than that of the eye-measures made on different nights.

THE LATITUDE OF DETROIT.—A determination of the latitude of the Detroit Observatory has recently been made by Dr. Ludovic Estes.¹ The zenith telescope was employed, and the results were discussed by the method of least squares. The value arrived at after all corrections is 42° 16' 48''·66 ± 0''·051. An interesting point in connection with the observations is that smaller values were obtained from low stars, which seems "to indicate that northern stars are refracted less than southern, for the same zenith distance; and that, therefore, the layers of the atmosphere, instead of being parallel to the surface of the earth, are depressed more rapidly toward the north" (p. 54).

THE MINOR PLANET VICTORIA.—A programme has been prepared by Dr. Gill, of the Royal Observatory, Cape of Good Hope, for observations of the minor planet Victoria at its opposition in 1889; the opposition in right ascension occurring on July 16, and the primary object of these observations being to

determine the parallax of the sun from heliometric measures. A list of comparison stars is given, and is so arranged that when the planet is situated at the greatest zenith distance where good observations may be made, one comparison star may be below and another above it, the measurement by the heliometer of the difference of two nearly equal and opposite distances giving the most accurate result obtainable.

Victoria has a zenith distance of 62° at an hour-angle of 4h. for the Cape, 2h. for European Observatories, and 3h. for Newhaven. A list is given of the limits of hour-angle during which observations of the planet may be made from June 10 to August 29.

The corrected ephemeris of the planet has been computed, and it is hoped that co-operating meridian Observatories will determine the places of the thirty-seven comparison stars with the meridian circle, and at the same time procure as many meridian observations of the planet as possible. Provided that means exist for determining the distortion of the photographic film, and the optical distortion of the field, photographs taken in both hemispheres showing the planet lengthened out so as to form a straight line, whilst neighbouring stars are well defined, are available for the determination of parallax. Dates are also given when photographic observations of Victoria may be advantageously combined with heliometer observations.

MERIDIAN OBSERVATIONS OF IRIS.—A similar programme to the above was issued by Dr. Gill, in September 1888, for observations of the minor planet Iris; and Mr. Arthur A. Rambaut, assistant astronomer at Dunsink Observatory, has made observations, with the meridian circle, of the places of the planet and the twenty-eight comparison stars given. The measures will be found in *Monthly Notices R.A.S.*, March 1889, and extend from September 7, 1888, to January 10, 1889. Between these dates twenty-six observations of Iris were made, and its apparent right ascension and declination found. During the progress of the work two comparison stars were added to Dr. Gill's list.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1889 JUNE 2-8.

(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 June 2

Sun rises, 3h. 50m.; souths, 11h. 57m. 45'8s.; daily increase of southing, 9'6s.; sets, 20h. 6m.: right asc. on meridian, 4h. 42'3m.; decl. 22° 15' N. Sidereal Time at Sunset, 12h. 52m.

Moon (at First Quarter on June 6, 20h.) rises, 6h. 42m.; souths, 15h. 2m.; sets, 23h. 17m.: right asc. on meridian, 7h. 46'8m.; decl. 22° 19' N.

Planet.	Rises.	Souths.	Sets.	Right asc. and declination on meridian.	
				h. m.	h. m.
Mercury..	5 4 ...	13 25 ...	21 46 ...	6 9'7	... 23 56' N.
Venus ...	2 25 ...	9 28 ...	16 31 ...	2 12'5	... 11 33' N.
Mars ...	4 1 ...	12 16 ...	20 31 ...	5 0'6	... 23 19' N.
Jupiter ...	21 49*	1 44 ...	5 39 ...	18 26'6	... 23 6' S.
Saturn ...	8 52 ...	16 28 ...	0 4*	9 13'2	... 17 17' N.
Uranus ...	14 52 ...	20 22 ...	1 52*	13 7'7	... 6 31' S.
Neptune..	3 31 ...	11 18 ...	19 5 ...	4 2'6	... 19 5' N.

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

June.	h.	
4 ...	8 ...	Saturn in conjunction with and 1° 47' south of the Moon.
6 ...	— ...	Venus at period of greatest morning brilliancy.
6 ...	20 ...	Mercury stationary.

Saturn, June 2.—Outer major axis of outer ring = 39''·1; outer minor axis of outer ring = 10''·6; southern surface visible.

Meteor-Showers.

	R.A.	Decl.	
Near β Coronæ 228	... 30° N.	... June 2.
,, β Ophiuchi 262	... 5° N.	... Rather slow.
,, α Cephei 317	... 61° N.	... Swift; streaks.

¹ Ann Arbor, Mich.: The Register Printing and Publishing Company, 1888.