

utensils. A representation of the constellation of the Great Bear was, although rudely, carefully drawn on the slab. It may be remembered that some years ago a similar slab was found near Weimar.

THE additions to the Zoological Society's Gardens during the past week include a White-fronted Capuchin (*Cebus albifrons*) from Central America, presented by Mr. H. A. Blake; a Mississippi Alligator (*Alligator mississippiensis*) from Florida, presented by Miss Janet D. White; a Common Gannet (*Sula bassana*), British, presented by Mr. F. E. Hatfield; two Dominican Kestrels (*Tinnunculus dominicensis*), two Green Bitterns (*Victorides virescens*), from West India, presented by Dr. A. Boon, F.R.C.S.; a Raven (*Corvus corax*), British, presented by Mr. Robert Galland; a Ring-tailed Coati (*Nasua rufa*), a Globeose Curassow (*Crax globicera*), from Central America, a Clouded Iguana (*Cyclura carinata*), from Cuba, deposited; a Black-necked Swan (*Cygnus nigricollis* ?) from Chili, purchased; a Leopard (*Felis pardus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

NOTES ON VARIABLE STARS.—Mr. T. E. Espin, Observer to the Liverpool Astronomical Society, announces in the Society's *Circular*, No. 6, that the star D.M. + 8° 3780, stated in *Circular* No. 2 (NATURE, vol. xxiv. p. 110) to be probably variable, passed its maximum about June 4, at which time its magnitude was 6.8. Since this date it has diminished in brightness, and on August 20 it was only 8.2. The star would seem to be a long-period variable. Its place for 1885 is R.A. 18h. 32m. 51s., Decl. + 8° 43' 5". Mr. Espin also states that he has detected variation in the red star D.M. + 47° 3031, which passed a minimum about the end of April. On May 14 it was only 8.9, since which it has increased, and is now 7.7. This star also is a long-period variable. Its place for 1885 is R.A. 20h. 5m. 58s., Decl. + 47° 28' 9". It precedes 32 Cygni by 5m. 57s., and is 9' north of it.

Circular No. 7 states that—(1) The observations of 10 Sagittæ on sixty nights since 1885 November 28 give: Period = 8.32134d., Epoch of Max. 1886 July 17.561. A minimum occurs on 1886 September 1.6d., and a maximum on 1886 September 5.5d. (2) The star D.M. + 17° 3940 was observed as 9.5 on April 26 last. From this date it increased, and on June 13 it was 8.3. Latterly it has diminished, and on August 20 it was 8.7. Vogel gives the spectrum as IIIb. ! Dunér as IIIa. !! The star's place for 1885 is R.A. 19h. 16m. 33s., Decl. + 17° 26' 4".

WINNECKE'S COMET.—From the *Dun Echt Circular*, No. 124, we learn that this periodical comet has been found at Cape Town. It is described as circular, less than 1' in diameter, as bright as a star of the 10th magnitude, and as having some central condensation but no tail. Its observed place was Greenwich M.T. Aug. 20, 5h. 47m. 54s., R.A. 13h. 10m. 21.5s., Decl. 1° 8' 17" S. The daily motion, according to Lamp's ephemerides (*Astronomische Nachrichten*, No 2731) is about plus 3'3m. and 32' south.

THE OBSERVATORY OF YALE COLLEGE. —The report of the work done at this Observatory during the year ending June 1, 1886, has recently been issued. The chief astronomical work is that done with the heliometer in charge of Dr. W. L. Elkin. With this instrument considerable progress has been made with the triangulation of the Pleiades, completing the series obtained in the previous year. All the stars have now been observed on from ten to twelve nights, and a total of over 1600 measures of distance and 700 of position-angle are available for discussion. The principal observing work accomplished by Dr. Elkin, has, however, been in connection with the scheme for determining the average parallax of the first-magnitude stars as a step towards the more comprehensive plan proposed by Gill and Elkin in concert. It is proposed at present to take the ten brightest stars in the northern hemisphere and observe them each from sixteen to twenty times at epochs of maximum parallax displacement, using a favourably situated pair of comparison stars—in some cases a double pair, or four stars. Arcturus, with its large proper motion, presents an object of

especial interest, and it has been taken up in a more exhaustive manner with six pairs of comparison stars, five of which have been successfully followed up so far. The whole work is progressing satisfactorily, over 200 sets of measures having been made, and is rather more than half completed, the working plan extending until February 1887. Astronomers will await with interest the completion and publication of Dr. Elkin's important researches.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1886 SEPTEMBER 5-11

(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 September 5

Sun rises, 5h. 21m.; souths, 11h. 58m. 34.8s.; sets, 18h. 36m.; decl. on meridian, 6° 45' N.; Sidereal Time at Sunset, 17h. 35m.
Moon (at First Quarter) rises, 13h. 38m.; souths, 18h. 11m.; sets, 22h. 41m.; decl. on meridian, 17° 44' S.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian
Mercury	3 38	10 53	18 8	13 44 N.
Venus	3 8	10 34	18 0	15 33 N.
Mars	10 44	15 28	20 12	15 15 S.
Jupiter	7 46	13 37	19 28	2 34 S.
Saturn	0 23	8 27	16 31	21 42 N.

Oculations of Stars by the Moon (visible at Greenwich)

Sept.	Star	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image
7	B.A.C. 6536	6½	21 43	22 33	65 353
10	B.A.C. 7487	6½	20 11	21 12	129 234

Sept. 7 ... 5 ... Mercury at least distance from the Sun.

Variable Stars

Star	R.A.	Decl.	h. m.
U Cephei	0 52.2	81 16 N.	Sept. 6, 20 6 m
Algol	3 0.8	40 31 N.	" 11, 19 46 m
ζ Geminorum	6 57.4	20 44 N.	" 11, 22 49 m
δ Libræ	14 54.9	8 4 S.	" 7, 3 3 m
U Ophiuchi	17 10.8	1 20 N.	" 7, 2 8 m
T Herculis	18 4.8	31 0 N.	" 5, M
U Sagittarii	18 25.2	19 12 S.	" 8, 0 0 m
R Scuti	18 41.4	5 50 N.	" 6, m
β Lyræ	18 45.9	33 14 N.	" 6, 0 0 M
η Aquilæ	19 46.7	0 43 N.	" 6, 0 0 M
R Delphini	20 9.4	8 45 N.	" 7, M
T Aquarii	20 43.9	5 34 S.	" 6, m
S Pegasi	23 14.8	8 18 N.	" 5, M

M signifies maximum; m minimum.

Meteor Showers

Meteors have been observed at this season from the following radiant:—Near σ Eridani, R.A. 55°, Decl. 6° S.; from Camelopardus, R.A. 60°, Decl. 60° N.; from near μ Persei, R.A. 65°, Decl. 46° N.; from near μ Tauri, R.A. 65°, Decl. 6° N.; and near α Pegasi, R.A. 345°, Decl. 13° N.

SCIENTIFIC SERIALS

Journal de Physique, July.—Prof. Mascart, on magnetisation. A study of the secondary effect produced by the reaction of the polar surfaces on the magnetising field. The author calculates also the influence of the earth's magnetism in producing temporary alteration in the magnetisation of a needle during oscillation, an effect which he finds to have been often exaggerated, and not to exceed 1/1000 part of the whole magnetisation.—P. Duhem, on the calorific capacity of dissociable gaseous combinations. Discussion and expansion of the formulae