

mines, manufactories, and chemical works of the neighbourhood are occasionally made. The Department of Experimental Physics includes courses of lectures arranged progressively, and practical instruction in the physical and electrical laboratory. Those students who attend the mechanical engineering course enter engineering works during the six summer months, and, in accordance with this scheme, various manufacturing engineers in the neighbourhood have consented to receive students of the College into their offices and workshops as articulated pupils; the engineering laboratory is provided with a powerful testing-machine, and instruction in the use of tools is given in the workshop. Special courses in surveying are given, and excursions for field practice are frequently made. The Department for Geology, Biology, and Zoology includes various courses of lectures in all branches of those subjects, together with laboratory instruction. In the Botanical Department practical instruction is given by means of the Botanical Gardens, which contain upwards of 1000 specimens.

THE additions to the Zoological Society's Gardens during the past week include a Common Mole (*Talpa europæa*), British, presented by Mr. J. Scatcherd; two Hawfinches (*Coccothraustes vulgaris*), British, presented by Mr. W. Strutt; a Lanner Falcon (*Falco lanarius*), European, received; two Common Vipers (*Vipera berus*), British, presented by Mr. W. Robertson; a Common Viper (*Vipera berus*), British, presented by Mr. W. H. B. Pain; two Common Marmosets (*Hapale jacchus*) from Brazil, three Indian Crocodiles (*Crocodilus palustris*) from India, deposited; a Mesopotamian Fallow Deer (*Dama mesopotamica*), four Long-fronted Gerbilles (*Gerbillus longifrons*), five American Milk-Snakes (*Coluber eximius*), an Argus Pheasant (*Argus gigantæus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

CHANGES OBSERVED ON THE SURFACE OF MARS.—In the July number of the *Bulletin Astronomique* M. Perrotin gives a detailed account of his observations of Schiaparelli's "Canals" made during the months of April and May of the present year (NATURE, June 3, p. 110), remarking that their appearance differs little from that observed in the Milan astronomer's chart drawn in 1882, and that these markings appear to indicate the existence of a state of things, in the equatorial regions of the planet, which, if not absolutely permanent, at all events give evidence of considerable stability. But during the progress of the Nice observations of the "canals," some changes were noticed in the neighbourhood of the Kaiser Sea (Schiaparelli's Syrtis Major), which M. Perrotin has thought it worth while to put on record. During the earlier observations this part of the planet's surface was dark, like all the Martial "seas," and as it is represented in the chart. On May 21, however, the part of Syrtis Major extending from 10° to 55° of north latitude was seen to be covered with a luminous cloud forming regular and parallel bands, stretching from north-west to south-east on the surface, in colour somewhat similar to that of the continents, but not quite so bright. On the 22nd these cloud-like structures were more uniformly distributed than on the previous day; they were also seen on the three following days, but were noted to be of considerably diminished intensity. On May 25 the Nice observers noted the visibility of the isthmus which is placed in Schiaparelli's chart on the prolongation of Syrtis Major, below its junction with Nilus, in longitude 300° and north latitude 52°, and which had not hitherto been seen by them. M. Perrotin thinks it probable that these appearances are really due to clouds circulating in the atmosphere of Mars; at all events he concludes they arise from something connected with the atmosphere or with the surface of the planet capable of motion and of change in a comparatively short space of time.

A SUSPECTED NEW VARIABLE STAR.—In *Circular* No. 8 of the Liverpool Astronomical Society, Rev. T. E. Espin states that the star D.M. + 35° 4002 was observed by him on the night of June 26 last as a very red 8.5 mag. star. On August

29 it was again observed with the same comparison stars, and was found to be barely 9.5. There seems, therefore, reason for suspecting it of variation. Dunér calls this star "rouge-jaune foncé," spectrum IIIb. 11, and identifies it with Pickering No. 36 (*Astronomische Nachrichten*, No. 2376), which seems improbable, as Pickering's place is 1m. 20s. preceding and 0° 7' south. The place of D.M. + 35° 4002 for 1885 is R.A. 20h. 6m. 3s., Decl. + 35° 36' 1.

THE BINARY STAR OΣ 234.—In the *Astronomische Nachrichten*, No. 2743, Mr. J. E. Gore publishes elliptic elements of the orbit of this binary. The components are of magnitudes 7 and 7.4, and the star has always been a close and difficult object to measure even with large telescopes. Mr. Gore considers his orbit as provisional only, on account of the discordance of some of the recorded measures. The following are the elements:—

P = 63.45 years	Ω = 124° 11' (1880.0)
T = 1881.15	λ = 71° 58'
e = 0.3629	α = 0".339
γ = 47° 21'	μ = + 5".67

Mr. Gore states that these elements satisfy the observations fairly well from 1844 to 1853, and from 1870 to 1880, but in the years 1858–66 the discordances are considerable. The position of the star for 1880.0 is R.A. 11h. 24m. 20s., Decl. + 41° 58'.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1886 SEPTEMBER 12–18

(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 12

Sun rises, 5h. 31m.; souths, 11h. 56m. 11.0s.; sets, 18h. 21m.; decl. on meridian, 4° 7' N.; Sidereal Time at Sunset, 17h. 48m.

Moon (Full on September 13) rises, 18h. 8m.; souths, 23h. 38m.; sets, 5h. 16m.*; decl. on meridian, 6° 34' S.

Planet	Rises		Souths		Sets		Decl. on meridian
	h. m.	...	h. m.	...	h. m.	...	
Mercury ...	4 10	...	11 9	...	18 8	...	10 46 N.
Venus ...	3 30	...	10 40	...	17 50	...	12 53 N.
Mars ...	10 44	...	15 19	...	19 55	...	16 46 S.
Jupiter ...	17 27	...	13 15	...	19 3	...	3 9 S.
Saturn ...	23 58*	...	8 2	...	16 6	...	21 37 N.

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

Occultations of Stars by the Moon (not actually occulted at Greenwich)

Sept.	Star	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image	
					h. m.	h. m.
13	φ Aquarii	4½	1 50	near approach	227	—
13	24 Piscium	6½	20 33	near approach	168	—
16	ν Piscium	4½	7 12	near approach	56	—

Sept. h. m. Venus at least distance from the Sun.
18 ... 21 ...

Variable Stars

Star	R.A.		Decl.	h. m.
	h. m.	...		
U Cephei ...	0 52.2	...	81 16 N.	Sept. 16, 19 25 m
Algol ...	3 0.8	...	40 31 N.	,, 14, 19 38 m
ζ Geminorum ...	6 57.4	...	20 44 N.	,, 13, 21 15 M
				18, 23 6 m
δ Libræ ...	14 54.9	...	8 4 S.	,, 14, 2 37 m
U Coronæ ...	15 13.6	...	32 4 N.	,, 15, 2 2 m
U Ophiuchi ...	17 10.8	...	1 20 N.	,, 12, 2 55 m
				and at intervals of 20 8
β Lyræ ...	18 45.9	...	33 14 N.	Sept. 18, 21 0 M
η Aquilæ ...	19 46.7	...	0 43 N.	,, 13, 5 0 M
				,, 18, 0 0 m
δ Cephei ...	22 24.9	...	57 50 N.	,, 12, 5 0 M
				,, 15, 22 0 m

M signifies maximum; m minimum.