

COMET 1888 *a* (SAWERTHAL).—The following ephemeris for Berlin midnight is by Herr Berberich (*Astr. Nach.*, No. 2838), from elliptic elements which he has found for it, and which closely resemble those of Prof. Boss given in NATURE of May 24 (p. 88):—

1888.	R.A.	Decl.	Log <i>r</i> .	Log Δ .	Bright-ness.
	h. m. s.	°			
June 23...	0 55 11	46 11'5 N.	0'2760	0'3129	0'042
25...	0 57 1	46 40'5			
27...	0 58 42	47 8'9	0'2887	0'3173	0'039
29...	1 0 16	47 36'6			
July 1...	1 1 42	48 3'7	0'3009	0'3212	0'036
3...	1 3 0	48 30'2			
5...	1 4 9	48 56'0	0'3127	0'3247	0'033
7...	1 5 9	49 21'2			
9...	1 6 1	49 45'7	0'3241	0'3278	0'031
11...	1 6 44	50 9'6			
13...	1 7 18	50 32'8 N.	0'3352	0'3306	0'029

The brightness at discovery is taken as unity.

THE Kazan Observatory has celebrated its "Jubilee" by publishing an interesting report about its activity since it was founded by Littrow fifty years ago. The mapping of the stars between 75° and 80°, which was begun by Prof. Kovalsky, was continued and extended by his successor, Prof. Dubyago.

THE Tashkend Observatory has just issued the second volume of its "Works."

ASTRONOMICAL PHENOMENA FOR THE WEEK 1888 JUNE 24-30.

(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 24

Sun rises, 3h. 46m.; souths, 12h. 2m. 13'7s.; sets, 20h. 19m.; right asc. on meridian, 6h. 14'5m.; decl. 23° 25' N. Sidereal Time at Sunset, 14h. 33m.

Moon (Full, June 23, 21h.) rises, 19h. 57m.*; souths, oh. 9m.; sets, 4h. 20m.; right asc. on meridian, 18h. 19'6m.; decl. 21° 5' S.

Planet.	Rises.		Souths.		Sets.		Right asc. and declination on meridian.	
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	
Mercury..	5 33	...	13 25	...	21 17	...	7 37'2 ... 19 52 N.	
Venus.....	3 23	...	11 41	...	19 59	...	5 53'7 ... 23 36 N.	
Mars.....	13 28	...	18 53	...	0 18*	...	13 6'5 ... 7 39 S.	
Jupiter....	17 6	...	21 29	...	1 52*	...	15 42'7 ... 18 47 S.	
Saturn....	6 29	...	14 19	...	22 9	...	8 31'3 ... 19 34 N.	
Uranus ...	12 56	...	18 36	...	0 16*	...	12 49'3 ... 4 35 S.	
Neptune..	1 59	...	9 45	...	17 31	...	3 56'9 ... 18 47 N.	

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

Comet Sawertal.

June.	h.	Right Ascension.	Declination.
		h. m.	°
24	...	0 55'2	46 12 N.
28	...	0 58'7	47 9

Occultations of Stars by the Moon (visible at Greenwich).

June.	Star.	Mag.	Disap.	Reap.	Corresponding angles from vertex to right for inverted image.
			h. m.	h. m.	h. m.
24	... 50 Sagittarii	... 6	... 22 6	... 23 16	... 65 250
28	... 50 Aquarii	... 6	... 2 28	... 2 59	... 163 215
June.	h.				
25	... 9	Mercury stationary.			
27	... 23	Mercury at greatest distance from the Sun.			

Meteor-Showers.

	R.A.	Decl.	
Near 52 Hercules	... 253	... 47 N.	June 25-30. Swift.
,, 8 Cygni	... 295	... 40 N.	Slow.
,, 6 Delphini	... 305	... 9 N.	June 28.

Variable Stars.

Star.	R.A.		Decl.		h. m.
	h. m.	°	h. m.	°	
U Cephei ...	0 52'4	81 16 N.	June 25,	22 54	<i>m</i>
R Geminorum ...	7 0'6	22 53 N.	,,	30, 22 33	<i>m</i>
δ Libræ ...	14 55'0	8 4 S.	,,	27,	<i>M</i>
U Ophiuchi...	17 10'9	1 20 N.	,,	29, 2 2	<i>m</i>
			,,	28, 2 52	<i>m</i>
			,,	28, 23 0	<i>m</i>
W Sagittarii ...	17 57'9	29 35 S.	,,	24, 2 0	<i>m</i>
T Herculis ...	18 4'9	31 0 N.	,,	27,	<i>M</i>
U Sagittarii...	18 25'3	19 12 S.	,,	30, 2 0	<i>m</i>
β Lyræ...	18 46'0	33 14 N.	,,	28, 22 0	<i>m</i>
S Vulpeculæ ...	19 43'6	27 1 N.	,,	26,	<i>M</i>
η Aquilæ ...	19 46'8	0 43 N.	,,	24, 21 0	<i>m</i>
R Sagittæ ...	20 9'0	16 23 N.	,,	27,	<i>m</i>
X Cygni ...	20 39'0	35 11 N.	,,	26, 22 0	<i>M</i>
δ Cephei ...	22 25'0	57 51 N.	,,	27, 21 0	<i>M</i>

M signifies maximum; *m* minimum.

GEOGRAPHICAL NOTES.

LIEUTENANTS KUND AND TAPPENBECK have been conducting an expedition into the Cameroons interior during the latter part of 1887 and the beginning of the present year. Starting from Batanga they succeeded in penetrating as far as 12° 30' W. long., when, being attacked by Soudan Negro traders they were forced to retreat, both of them seriously wounded. They succeeded in tracing the course of the Beundo or Njong River far into the interior, and brought back much information concerning the people and the products of the country. With regard to general results, they found that the water-parting between the rivers that discharge in the Cameroons interior and those that flow into the Congo Basin lies not near the coast as has hitherto been supposed, and therefore it is hoped that a navigable route may be discovered that will lead well into the interior. The water-parting between the left tributaries of the Binué and the rivers in the German Cameroons also lies far in the interior. The division between the Soudan Negroes and the Bantus is not to be looked for in the direction of Adamawa, but southwards is formed by the Zannaga River and eastwards lies at a distance of 150 miles from the coast. Lieutenants Kund and Tappenbeck assert that the area of Mohammedan influence extends much farther south than has hitherto been thought. No signs of volcanic action have been met with as far as the Zannaga River or in the mountains to the north. The profile which accompanies the report shows a coast plain about 70 feet high, succeeded by a sharp slope rising to a height of from 3000 to 4000 feet, beyond which the country slopes gradually to the inner African plateau, about 2500 feet above the sea.

THE June number of Petermann's *Mitteilungen* is mostly occupied with a memoir by Dr. Supan on "A Century of African Exploration," written in commemoration of the centenary of the British African Association, founded in June 1788. Dr. Supan traces the gradual opening up of the continent and its various regions, the text being illustrated by a series of most instructive maps. In indicating what yet remains to be done, Dr. Supan maintains that it is a mistake to assert that the days of pioneer exploration are over. He shows that while a few patches have been surveyed with some care, while of others we have a general knowledge, and while in other regions lines of travel have been run through, there are great regions that still remain absolutely blank. In the north, in the region of the Sahara, which has been so long known to Europe, the blanks are almost greater than elsewhere, leaving ample room for pioneer work, which may very well be carried on alongside of more minute exploration.

TECHNICAL INSTRUCTION.¹

IN celebrating as we are now doing the fifty-first annual meeting of the Yorkshire Union of Institutes, one's thoughts naturally revert to the foundation of that Union and to the educational progress which our country has made since the earlier years of the century; and round these thoughts will gravitate recollections of the life and labours of your revered President,

¹ Address delivered by Sir Henry Roscoe, M.P., F.R.S., at Castleford, on Wednesday, June 20, on the occasion of the fifty-first annual meeting of the Yorkshire Union of Mechanics' Institutes.