

THE additions to the Zoological Society's Gardens during the past week include a Black-eared Marmoset (*Hapale penicillata*) from South-east Brazil, presented by Mr. J. A. Watson, F.Z.S.; a Lesser White-nosed Monkey (*Cercopithecus petaurista* ♀) from West Africa, presented by Mr. E. B. Parfitt; a Macaque Monkey (*Macacus cynomolgus* ♀) from India, presented by Mrs. H. F. Batt; a Sambur Deer (*Cervus aristotelis* ♂) from India, presented by Capt. George James; a Common Badger (*Meles taxus*, white variety), British, presented by the Hon. Morton North; a Jackdaw (*Corvus monedula*), British, presented by Mrs. Bowden; a Blessbok (*Alcelaphus albifrons* ♂) from South Africa, four Undulated Grass Parrakeets (*Melospittacus undulatus* 2 ♂ 2 ♀) from Australia, deposited; an Australian Crane (*Grus australasiana*), two Chestnut-eared Finches (*Amadina castanotis*) from Australia, three European Flamingoes (*Phenicopterus antiquorum*), four Great Bustards (*Otis tarda*), European, purchased.

OUR ASTRONOMICAL COLUMN.

OBJECTS FOR THE SPECTROSCOPE.

Sidereal Time at Greenwich at 10 p.m. on April 17 = 1h. 43m. 55s.

Name.	Mag.	Colour.	R.A. 1890.	Decl. 1890.
(1) G.C. 2841	—	White.	h. m. s.	° ' "
(2) 137 Schj.	6	Yellowish-red.	12 13 33	+47 55
(3) ♂ Leonis... ..	4	Yellowish-white.	10 54 5	-15 52
(4) ♂ Leonis	2	White.	11 11 6	- 3 3
(5) 1556 Schj.	7	Red.	11 43 30	+15 11
(6) U Virginis	Var.	Reddish.	12 52 6	+66 35
			12 45 31	- 6 9

Remarks.

(1) This large white nebula is situated in the constellation of Ursa Major, and is thus described in the General Catalogue:—"Very bright, very large, suddenly brighter in the middle to a nucleus." According to Smyth, it is oval in shape, the lateral edges being better defined than the ends. Lord Rosse's telescope showed it to be much mottled. In 1866 Dr. Huggins described its spectrum as continuous, with "a suspicion of unusual brightness about the middle part." No observations of the spectrum appear to have been made since then, but it is important that it should be re-examined. The spectra of the white nebulae are usually almost entirely wanting in red light, and it is therefore quite possible that the brightening in the middle is nothing more than the green carbon fluting near λ517. Direct comparisons with the spectrum of a spirit-lamp flame would soon decide this point. In any case, if there be one or more brightenings, some attempt should be made to determine their positions.

(2) The spectrum of this star has not yet been completely described. Secchi stated that it was of the type of α Orionis, and Dunér states that it is most probably a star of Group II., but very feebly developed. As I have previously pointed out, it is these "feebly developed" stars of Group II. which require further examination rather than those which are described as "fully developed," as they are probably transition stages between Groups I. and II., or Groups II. and III.

(3) According to Konkoly, this star has a well-developed spectrum of the solar type. Differential observations as to whether the star belongs to Group III. or to Group V. are required. (For criteria so far determined, see p. 20.)

(4) The spectrum of this star is a very fine one of Group IV. The usual observations are required.

(5) D'Arrest and Dunér both describe the spectrum of this star as a magnificent one of Group VI. According to Dunér, the principal bands are very dark, and the subsidiary bands 4 and 5 are well visible, while the bands 1, 2, 3 are very weak. He also states that the spectrum is rendered unique by the fact that the least refrangible part of the sub-zone in the yellow is considerably weaker than the other. Further observations, as previously suggested for similar stars, should be made.

(6) This star affords another opportunity of searching for

bright lines in the spectrum of a variable of Group II. near maximum. Vogel states that the spectrum is a fine one of Group II., but we have as yet no detailed description of the bands present. The period of the variable is about 207 days, and it ranges in magnitude from 7.7-8.1 at maximum to 12.2-12.8 at minimum. The maximum will occur on April 21, but as Mr. Espin has noticed that the bright lines sometimes do not appear until after the maximum, it will be desirable to continue the observations for some days after. The variations of the bright carbon flutings should also receive attention.

A. FOWLER.

COMET BROOKS (a 1890).—The following elements have been computed by Dr. Bidschof, of the Imperial Observatory, Vienna, from observations at Cambridge, U.S., March 21; Vienna, March 4 and 28 (*Astr. Nach.*, No. 2962):—

T = 1890 June 3'6399 Berlin mean time.

$$\begin{aligned} \omega &= 71 \quad 7.5 \\ \Omega &= 320 \quad 44.9 \\ &= 121 \quad 17.2 \end{aligned} \left. \vphantom{\begin{aligned} \omega \\ \Omega \end{aligned}} \right\} \text{Mean Eq. } 1890^{\circ}.$$

log q = 0.27189

Ephemeris for Berlin Midnight.

1890.	R.A.	Decl.	1890.	R.A.	Decl.
h. m. s.	° ' "	° ' "	h. m. s.	° ' "	° ' "
April 16...21	9 21... +19 21'0		April 26...21	4 5... +26 15'1	
17...	9 0... 19 59'2		27...	3 18... 27 0'9	
18...	8 37... 20 38'0		28...	2 27... 27 47'6	
19...	8 13... 21 17'5		29...	1 33... 28 35'0	
20...	7 47... 21 57'7		30...	0 34... 29 33'3	
21...	7 18... 22 38'6		May 1...20	59 31... 30 12'4	
22...	6 46... 23 20'3		2...	58 23... 31 2'3	
23...	6 10... 24 2'8		3...	57 10... 31 52'9	
24...	5 32... 24 46'1		4...	55 51... 32 44'3	
25...	4 50... 25 30'2				

Brightness, that at discovery being unity—

$$\begin{aligned} 18 \text{ April} &= 1.81. & 30 \text{ April} &= 2.39. \\ 22 \text{ ,,} &= 1.99. & 4 \text{ May} &= 2.62. \\ 26 \text{ ,,} &= 2.18. & & \end{aligned}$$

NEW VARIABLE IN CÆLUM.—Prof. Pickering, in a communication to *Astr. Nach.*, No. 2962, notes that an examination of a plate taken by Mr. S. J. Bailey at the Closica station in Peru, shows that the G and h lines of hydrogen are bright in the spectrum of a star whose position for 1875 is R.A. 4h. 36.2m., Decl. - 38° 29'. An inspection of photographic chart plates indicates that the star is variable, and its spectrum seems to place it in the same class as α Ceti, R Hydrae, R Leonis, and other long-period variables. The date on which the plate was taken is not given, but it is observed that the spectrum is as bright photographically as that of Cordoba Catalogue No. 1077, which is of the magnitude 7½, and since the former is a red star, it was probably much brighter visually. Eye observations at Cambridge, U.S., on February 20 and 21 of this year show that the star was then about magnitude 10.5. It seems, therefore, that the bright lines of hydrogen were photographed in the spectrum of this object when it was near a maximum.

GEOGRAPHICAL NOTES.

THE Council of the Royal Geographical Society met on Monday, and finally decided upon the awards of the honours for the year. One of the Royal Medals has been awarded to Emin Pasha, in recognition of the services rendered by him to geography and the allied sciences by his explorations and researches in the countries east, west, and south of the Upper Nile during his administration of the Equatorial Province of Egypt. The other Royal Medal has been awarded to Lieut. F. E. Younghusband, for his journey across Central Asia in 1886-87, from Manchuria and Pekin *via* Hami and Kashgar, and over the Mushtagh to Cashmere and India, a distance of 7000 miles. The Cuthbert Peek grant has been awarded to Mr. E. C. Hare for his observations on the physical geography of Tanganyika made during his many years' residence on that lake. The Murchison grant has been awarded to Signor Vittoria Sella, in consideration of his recent journey in the Caucasus, and the advance made in our knowledge of the physical characteristics and the topography of the chain by means of his series of panoramic photographs taken above the snow level. The Gill