

C. Dallas; an Algerian Skink (*Eumeces algeriensis*) from North Africa, presented by Mr. R. H. Archer; a Rufescent Snake (*Leptodiva hotambaia*), a Hissing Sand Snake (*Psammophis sibilans*) from South Africa, presented by Mr. W. Champion; three Barbary Turtle Doves (*Turtur risorius*) from Africa, presented by Colonel E. J. Gardiner; three Blue-necked Cassowaries (*Casuarius intensus*) from New Guinea, a Senegal Parrot (*Paeocephalus senegalensis*) from West Africa, two Mute Swans (*Cygnus olor*, 2 ♂), European, and an Echidna (*Echidna hystrix*) from New South Wales, deposited; and a Hunting Crow (*Cissa venatoria*) from India, three Bar-tailed Godwits (*Limosa lapponica*), four Black-tailed Godwits (*Limosa aegoccephala*), ten Green Lizards (*Lacerta viridis*), four Toads (*Bombinator bombinus*), European, purchased; a Japanese Deer (*Cervus sika*, ♂), an English Wild Cow (*Bos taurus*), two Squirrel-like Phalangers (*Petaurus sciureus*, 2 ♀), two Short-headed Phalangers (*Petaurus breviceps*, 2 ♂), a Patagonian Cavy (*Dolichotus patachonica*), a Crested Porcupine (*Hystrix cristata*), a Hybrid Lemur (between *Lemur macaco* and *Lemur brunneus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

TEMPEL'S COMET (1873 II).—Continued from *Astr. Nach.* (Bd. 149, No. 3554).

*Ephemeris for 12h. Paris Mean Time.*

1899.	R.A.	Decl.	Br.
	h. m. s.	° ' "	
June 15 ...	19 54 47.2	5 12 25	
16 ...	56 11.5	5 22 24	
17 ...	57 35.4	5 33 2	1.829
18 ...	19 58 58.9	5 44 20	
19 ...	20 0 21.9	5 56 19	
20 ...	1 44.5	6 8 59	
21 ...	3 6.7	6 22 21	2.048
22 ...	4 28.5	6 36 27	
23 ...	5 49.8	6 51 16	
24 ...	7 10.7	7 6 49	
25 ...	20 8 31.1	7 23 7	2.281

The comet is now more than four times as bright as when it was first re-observed by Prof. Perrine at Lick on May 6. Perihelion passage occurs on the 18th inst. During the period included in the above ephemeris the comet travels from the south-eastern part of Aquila to the north-west of Capricornus, being about 5° due north of α Capricorni on the 25th.

RETURN OF COMET HOLMES (1892 III).—Continued from *Astr. Nach.* (Bd. 149, No. 3553).

*Ephemeris for 12h. Greenwich Mean Time.*

1899.	R.A.	Decl.	Br.
	h. m. s.	° ' "	
June 15 ...	1 22 38.3	18 47 18	0.0341
17 ...	22 56.5	19 23 22	
19 ...	29 13.8	19 59 19	
21 ...	32 29.9	20 35 8	0.0351
23 ...	35 44.9	21 10 50	
25 ...	38 58.8	21 46 25	
27 ...	42 11.4	22 21 51	0.0362
29 ...	1 45 22.7	22 57 10	

During the above period the comet moves from near η Piscium to about 2 degrees north of β Arietis.

A telegram from Kiel, dated June 12, announces the first detection of this comet by Prof. Perrine at the Lick Observatory. The observation was made on June 10, at 15h. 2.2m. Lick Mean Time, the recorded position being

$$\begin{aligned} \text{R.A.} &= 1\text{h. } 15\text{m. } 32\text{s.} \\ \text{Decl.} &= + 17^\circ 29' 39'' \end{aligned}$$

which will be seen to be fairly in agreement with the computed position. The comet is described as being very faint.

COMET 1899 a (SWIFT).—A circular from the Central Bureau at Kiel calls attention to the importance of the increase of brightness of this comet, which was recorded by several observers on June 4 last. Herr Kreutz has received a telegram

from Herr Pokrowsky, of Dorpat, stating that communications received by him from Vienna, Bamberg and Hamburg, confirm the fact that on June 4 a decided brightening of this comet took place. The increase of magnitude was from 6 on June 2nd and 3rd to 5½ on the 4th. A telegram also from Herr Hartwig gives further details. "The nucleus was of 9.5 magnitude, the total brightness being of magnitude 5. Greatest diameter of Coma about 9'; increase of brightness undoubted."

Another, from Herr Schorr, states: "Strong eccentric fixed star-like nucleus of 6.5 magnitude. Total brightness of comet 5 magnitude. Coma 9' in diameter."

It will also be remembered that there was a decided increase in brightness of this comet from May 9 to 23, after which it gradually began to decline until the above sudden change was noted.

WHITE SPOT ON JUPITER.—Herr Ph. Fauth, writing from a private observatory at Landstuhl to *Astr. Nach.* (Bd. 149, No. 3570), announces the observation on several occasions of a brilliant white spot on the north-eastern belt of the planet. The marking was observed to pass central meridian on May 8 at 11h. 25m., and on May 18 at 9h. 33m. It is about 4" in diameter. The observations were made with a telescope of 7 inches aperture.

TWO NEW VARIABLE STARS.—M. Luizet, of the Lyons Observatory, announces in *Astr. Nach.* (Bd. 149, No. 3570) his observations leading to the discovery of two new variable stars in the constellations Vulpecula and Cygnus respectively.

The first is U Vulpeculae,

$$\begin{aligned} \text{B.D.} &+ 20^\circ 42' 00'' & \text{R.A.} &= 19\text{h. } 30\text{m. } 17\text{s. } 3\text{s.} \\ & & \text{Decl.} &= + 20^\circ 0' 8'' \end{aligned} \quad \left. \vphantom{\begin{aligned} \text{B.D.} \\ \text{Decl.} \end{aligned}} \right\} 1855^\circ 0.$$

Four comparison stars were used and forty-three observations made during the period August 4 to December 26, 1898. These observations after reduction are plotted as the light curve, which is symmetrical and similar to that of ζ Geminorum. A maximum was found to fall on the date

1898 October, 21.61 Paris Mean Time,

and this in conjunction with a previously observed maximum by MM. Müller and Kempf,

1897 October, 2.4765 Paris Mean Time,

gives the period as

$$8.003 \text{ days.}$$

The elements of the star U Vulpeculae are therefore adopted as

$$1897 \text{ October, } 2.4765 \text{ Paris M.T. } + 8.003\text{d. E.}$$

The second variable is S U Cygni, the position being

$$\begin{aligned} \text{B.D.} &+ 28^\circ 34' 60'' & \text{R.A.} &= 19\text{h. } 39\text{m. } 1\text{s. } 0\text{s.} \\ & & \text{Decl.} &= + 28^\circ 54' 9'' \end{aligned} \quad \left. \vphantom{\begin{aligned} \text{B.D.} \\ \text{Decl.} \end{aligned}} \right\} 1855^\circ 0.$$

Fifty-eight observations of this star were made from July 9 to December 26, 1898, and the results again plotted to give the light curve.

The period is determined to be

$$3.846\text{d.},$$

and succeeding maxima may be calculated from the elements:

$$1897 \text{ October, } 4.6665 \text{ Paris M.T. } + 3.846\text{d. E.}$$

This star has a light curve showing an irregular decrease of brightness from maximum during about 2.7d., and a more regular increase during 1.1d., these features showing the variability to be somewhat analogous to that of δ Cephei.

THE BORE AT MONCTON, BAY OF FUNDY.<sup>1</sup>

MONCTON is situated on the Petitcodiac River, nineteen miles above the mouth of the Petitcodiac, where it enters the Bay of Fundy. This part of the river is more correctly an estuary which continues thirteen miles further up, as far as Salisbury Junction. At high tide the river at Moncton forms a sheet of water half a mile in width, while at low tide it consists of mud banks and flats, with a stream about 500 feet wide

<sup>1</sup> Abridged by Prof. G. H. Darwin from an advance copy of the Report for 1898 of the Tidal Department of the Survey of Canada, sent by Mr. W. Bell Dawson.