Dr. F. Katzer; some curious geological effects produced by wind-borne sand, by Prof. J. N. Woldřich; the anatomy and development of the brain of vertebrates, by F. K. Studnička; the development of Stylomatophora, by J. F. Babor; determination of the altitude of the celestial pole by means of photography, by Prof. V. Láska; on *Baculus elongatus* (Lubbock) and *Lernæa branchialis*, a contribution to the anatomy of Lernæadæ, by A. Mrázek; studies of isopoda, by B. Němec; on electrolytic superoxide of silver, by Dr. O. Šulc; studies of the Coccidæ, by K. Šulc (this paper is summarised in English); the histology and histogenesis of the spinal cord, by Dr. F. K. Studnička; and new vertebrates from the Permian formation of Bohemia, by Prof. A. Fritsch.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*, ♀) from India, presented by Mrs. Bouveri; two Slow Lorises (*Nycticebus tardigradus*), a —— Toad (*Bufo asper*) from Penang, a Roseate Cockatoo (*Cacatua roseicapilla*) from Australia, a Lesser Sulphur-crested Cockatoo (*Cacatua sulphurea*) from Moluccas, two Spinose Land Emys (*Geomyda spinosa*), a Black-spotted Toad (*Bufo melanostictus*) from Singapore, presented by Mr. Stanley S. Flower; two Hairy Armadillos (*Dasypus villosus*) from Uruguay, presented by Messrs. FitzHerbert, Bros.; a Coati (*Nasua rufa*) from South America, presented by Mr. Ernest Brocklehurst; two Herring Gulls (*Larus argentatus*), two Black-headed Gulls (*Larus ridibundus*) British, presented by Baron Ferdinand de Rothschild; a Javan Porcupine (*Hystrix javanica*, white var.) from Java, a Leopard Tortoise (*Testudo pardalis*), a Natal Python (*Python sebæ*, var. *natalensis*) from South Africa, a Cunningham's Skink (*Egernia cunninghami*) from Australia, deposited; a Japanese Deer (*Cervus sika*, ♂), a Red Deer (*Cervus elaphus*, ♀), two Thars (*Capra jemlaica*, ♀ ♀), a Huanaco (*Lama huanacos*, ♂), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

OCCULTATION OF JUPITER.—On the evening of June 14 there will be an occultation of Jupiter and his satellites. The planet will disappear at 9h. 52m. G.M.T. at an angle of 113° from the north point towards the east, and reappear at 10h. 43m. at the position angle 293°. The moon will be about three and a half days old, but as it will set at 10h. 56m. the reappearance will occur under unfavourable conditions of observation. The sun will pass below the horizon of Greenwich at 8h. 16m. on the 14th.

COMET SWIFT.—The following elements for comet Swift, 1896, have been derived by F. Bidschof (*Ast. Nach.*, No. 3356).

T = 1896 April 17·68237 (Berlin M.T.)

$$\left.\begin{array}{rl} \omega = & 1^\circ\ 43'\ 55''.3 \\ \Omega = & 178\ 15\ 28.1 \\ i = & 55\ 33\ 42.8 \end{array}\right\} 1896{\cdot}0$$

$$\log q = 9{\cdot}753076$$

The following is a short ephemeris, the unit of brightness being that on April 19:—

	R.A. h. m. s.	Decl. ° ′	Brightness.
June 11 ...	22 17 17 ...	+72 43 ..	0·05
15 ...	21 52 31 ...	72 21 ...	0·05
19 ...	21 29 5 ...	71 46 ...	0·04
23 ...	21 7 20 ...	70 57 ...	0·03
27 ...	20 47 29 ...	69 57 ...	0·03
July 1 ...	20 29 38 ...	+68 45 ...	0·03

The last published observation is that of Dr. Engelhardt on May 11 (*Ast. Nach.*, No. 3353), when the comet was reported "faint."

SPOTS AND MARKINGS ON JUPITER.—During the past seventeen years Prof. Hough, of the Dearborn Observatory, has made an almost unbroken series of observations of the markings of Jupiter, with the special aim of studying the phenomena by means of micrometrical measures of size and position, rather than by sketches. He considers that for the proper interpretation of the changes taking place, such measurements, extending over a long period of time, are absolutely necessary, while the study of latitude variations is likely to lead to results as important as those of rotation period (*Ast. Nach.*, No. 3354). Photographs have been regarded as capable of giving results as accurate as micrometric measures in the telescope, but long experience has led Prof. Hough to doubt this conclusion. Notwithstanding its varying visibility, the size and shape of the great red spot have changed very little since 1879, though during recent years it was possibly 1″ shorter than when it was most conspicuous. The very slight change in the latitude of the spot during the last seventeen years seems to indicate that this object is the most stable of any of the markings. The average length of the spot, reduced to mean distance, has been 11″·61 or 37°·2. Measures of the equatorial belt and of several spots are also given, and it is worth noting that there are many advantages in Prof. Hough's method of expressing latitudes in direct measures of angular distance. A very suggestive observation was made on February 13, 1895. The third satellite was then observed in transit, at first as a black spot, but afterwards as a white disc; "after emersion, when the distance from the limb of the planet was 0″·4, the outline was sharply defined, and there was an absence of glow around the disc as though the satellite was immersed in a medium which absorbed some of its light."

COMET PERRINE-LAMP (1896 I.), which attracted considerable attention in the early part of the year, has probably now passed out of reach of even the largest telescopes. M. Schulhof has computed hyperbolic elements for this comet; but while the hyperbolic character of the orbit is still uncertain, it is established that the comet is not one of short period.

THE RELATIVE LENGTHS OF POST-GLACIAL TIME IN THE TWO HEMISPHERES.

SOME interesting observations on underground temperature have recently been made at Cremorne, near Port Jackson, in New South Wales.[1] The bore is 2939 feet deep, the mean temperature at the surface is 63° F., and the temperature at the depth of 2733 feet was found to be 97° F. The observations having been made with great care, the resulting gradient of 1° F. per 80 feet would appear to be "a good approximation to the truth." The rocks of the district down to a depth of about 3000 feet consist of sandstones, shales and conglomerates, and therefore, so far as conductivity is concerned, seem to be not unlike the rocks penetrated by the shafts of coal-mines in the north of England, or those in which Forbes' rock-thermometers were sunk in the neighbourhood of Edinburgh.

The estimates of the relative lengths of post-Glacial time in the two hemispheres, given on p. 138, are based on the following assumptions, the first three of which, it is needless to say, are only rough approximations to the truth. It is supposed (1) that in each hemisphere the gradient beneath the ice-sheet at the close of the Glacial period was the same[2]; (2) that the gradient at the surface may now be taken as equal to the average gradient over the whole boring; (3) that when the ice-sheet disappeared, the mean temperature of the district rose *suddenly* to its present value; and (4) that, previously to its disappearance, the temperature of the ground at the base of the ice-sheet was that of the freezing-point of water due to the pressure of the ice above, say 30°·5 F.[3]

The change in the gradient near the surface after a lapse of t years, due to a rise of b degrees in mean surface temperature, is $b/\sqrt{(\pi\kappa t)}$, where κ is the conductivity of rock expressed in terms of its own capacity for heat.[4] Now, the mean temperature over England averages 49°·5 F., so that b is here 19°, and the temperature gradient in the north of England is 1°·per 49 feet.[5] Hence,

$$\frac{19}{\sqrt{t}} = \sqrt{(\pi\kappa)}\left(\frac{1}{x} - \frac{1}{49}\right),$$

[1] Report of B. A. Underground Temperature Committee, 1895.
[2] This implies that the Glacial period was of the same—or, if not, of very great—length in each hemisphere.
[3] See a paper "On the Effect of the Glacial Period in changing the Underground Temperature Gradient" (*Geol. Mag.*, vol. ii., 1895, pp. 356-360).
[4] Rev. O. Fisher, *Phil. Mag.*, vol. xxxiv., 1892, p. 339.
[5] Sir J. Prestwich, "Controverted Questions of Geology," p. 203.