THE additions to the Zoological Society's Gardens during the past week include a Western Slender-billed Cockatoo (*Licmetis pasinator*) from Western Australia, presented by Mrs. Halford Stephens; a Crossed Snake (*Psammophis crucifer*), a Hoary Snake (*Coronella cana*), two Ring-hals Snakes (*Sepedon hæmachtes*) from South Africa, presented by Mr. J. E. Matcham; a Common Wombat (*Phascolomys wombat*), a White-backed Piping Crow (*Gymnorhin leuconota*) from Australia, deposited; wo Pennant's Parrakeets (*Platycercus pennanti*) from Australia, purchased; a Rufous Rat Kangaroo (*Hypsiprymnus rufescens*), a Red Kangaroo (*Macropus rufus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE TEMPERATURE OF THE SUN.—Ebert's recent estimate of the solar temperature (NATURE, vol. lii. p. 232), based upon Langley's energy curves for heated solid bodies, is called in question by Dr. Paschen (*Astrophysical Journal*, vol. ii. p. 202). It appears that certain precautions have not been taken in formulating the law derived from experimental data, and that consequently the law does not hold even for the limits of temperature between which direct observations can be made. The chief defects of the former evaluations is that the prismatic energy curves have not been transformed into those for the normal spectrum; and when this is taken into account, the supposition that the wave-length of maximum energy is inversely proportional to the square root of the absolute temperature falls to the ground.

From a series of experiments made with the object of furthering theoretical investigations, Dr. Paschen considers it extremely probable that "the wave-length of the maximum of energy in the spectrum of an absolutely black body is inversely proportional to the absolute temperature." Assuming provisionally as the quantitative results of his observations, wave-length of max. energy × absolute temp. = 2700, and adopting Langley's value of $0\mu{\cdot}5$ (μ = ·001 mm.) for the position of maximum energy in the normal solar spectrum, Dr. Paschen finds the solar temperature to be 5400° on the absolute scale, or 5130° C. This means that the sun gives an energy spectrum which is the same as that of an absolutely black body at 5130° C.; and this would be its temperature if its light were entirely a consequence of its heated condition, and if its surface possessed no selective reflection. Attention is drawn to the fact that as our experimental methods are improved, our estimates of the magnitude of the sun's temperature are reduced. Dr. Paschen's value is more than a thousand degrees lower than that of Messrs. Wilson and Gray.

THE DOUBLE STAR OΣ·285.—Dr. See, to whom we are indebted for the revision of the orbits of so many double stars, has lately given us another in the case of OΣ·285 (*Ast. Jour.* No. 356). We are almost tempted to ask whether any practical good results from the premature attempt to determine an orbit where insufficient observations exist, or where the chance errors of observations mask the apparent path of the star. Of course, one very practical value such inquiries may have, especially in the case of a close double star, is to point out the times when observations are likely to prove possible and effective. But the question arises, whether an elaborate interpolation formula or real elliptic elements are dealt with. We are the more concerned to put this question, because Dr. See himself points out that Mr. Gore has, from practically the same observations, given elements strikingly at variance with those to which he has been conducted. The more conspicuous differences between the two sets of elements are shown below.

	Gore (1845-1892).		See (1845-1895).
Period ...	118·57 years	...	76·67 years
Excentricity ...	0·58 ,,	...	0·470 ,,
Node ...	106°·58′ ,,	...	62°·2 ,,
Inclination ...	45·42 ,,	...	41·95 ,,

The difficulty of deciding which of the two orbits is the more probable representation of the motion is increased by the fact, that the position angle computed from both is very similar. Previous to 1865 and subsequent to 1887 (in the interval 1865–87, the observations were very uncertain, owing to the close approach of the components) the position angles computed from the two orbits for the same date are rarely separated by a degree, while occasionally the observations differ from the computed place by as much as ten degrees. Dr. See gives an ephemeris for the next five years, and if trustworthy observations can be made of stars separated by about o″·3, additional light will be thrown on the motion of this interesting pair.

THE SPECTRUM OF α AQUILÆ.—The fact that the lines in the spectrum of α Aquilæ are much broader than the corresponding lines in the majority of stellar spectra, was first noticed by Prof. Pickering, who suggested that this appearance might be due to a very rapid rotation of the star. Photographs taken at Kensington and Potsdam have also shown this haziness of the lines.

The spectrum of this star has formed the subject of a somewhat extended research by M. Deslandres at the Paris Observatory, and by the use of a comparison spectrum enabling him to determine the velocity in the line of sight, he has obtained results of great interest (*Comptes rendus*, Nov. 4, p. 629). He finds that very frequently there are fine double bright lines running through the middle of the dark lines of hydrogen, and even sometimes through those of iron and calcium; the brightness of these lines varies with respect to the general intensity of the spectrum, and M. Deslandres attributes them to the chromosphere of the star.

Measurements of the radial velocity are given for fifty-six dates, and they clearly indicate periodic but complex variations. The maximum velocity of approach with respect to the sun was 38·4 km. per second on September 19, 1892, and of recession 11·4 km. per second on July 25, 1895. There appears to be a great oscillation with a maximum velocity every forty-three days, and superposed on this are one or more secondary oscillations, one of which has probably a period of about five days. M. Deslandres believes his results to indicate that Altaïr is at least a spectroscopic triple star; but he states that for a more complete knowledge of the phenomena, better apparatus and a less variable sky than that of Paris will be necessary.

β Ursæ Minoris also exhibits rapid fluctuations of velocity, and M. Deslandres' results in connection with this star will form the subject of a future paper.

VARIABILITY OF RED STARS.—In the current number of *Knowledge*, Dr. Brester gives a general account of his theory as to the cause of variability in red stars (see NATURE, vol. xxxix. p. 492), and extends it a step in order to account for the appearance of bright lines. It is assumed that the stars in question are cooling bodies, and that the atmospheres are sufficiently cooled down to permit the existence of chemical compounds. When some of the vapours are cooled to the dew point, they will condense in obscuring clouds, and produce a minimum without any reduction of temperature. In addition to saturated vapours, if we follow Dr. Brester, the atmospheres will also contain molecules of dissociated matter, which will only combine after the condensation of the saturated vapours has rendered the mixture sufficiently concentrated. The combination of the dissociated molecules produces heat enough to vapourise the clouds, and the maximum is restored by the opening to view of the constantly glowing interior. The presence of bright lines in the spectrum of a variable star near maximum is ascribed to "luminescence" produced by the chemical combination of the dissociated molecules. Thus, the bright lines at the maximum, according to Dr. Brester, are not the effect of heat, but rather of cooling. Dr. Brester finds some justification for this supposed origin of bright lines in the fact that carbon bisulphide gives a discontinuous spectrum at no higher a temperature than 150°; but it must be remembered that the bright lines in question are usually those of hydrogen, and there is no experimental demonstration that these lines can be produced except at a high temperature. To us it seems easier to regard the bright lines of hydrogen as being produced by true elevations of temperature about the time of maximum, such as are explained by the meteoritic hypothesis.

TYPHOID FEVER EPIDEMICS IN AMERICA.

THE factors which control the dissemination of disease are so numerous, and in many cases so complicated, that it is often only after long and patient searching that an epidemic is successfully tracked to the original nidus from which it has sprung.

By the careful record of data of this description, compiled with accuracy and care, we shall gradually become possessed of trustworthy material out of which an historical survey may be built up, and the task of deciphering the course and conduct of epidemic diseases materially lightened.