

THE additions to the Zoological Society's Gardens during the past week include a Servaline Cat (*Felis servalina*), a Serval (*Felis serval*) from Uganda, presented by Mr. Francis G. Hall; a Greater Sulphur-crested Cockatoo (*Cacutua galerita*) from Australia, presented by Mr. P. G. Dupuch; two Golden Eagles (*Aquila chrysaetus*), European, presented by Edgar Baxter; a Yellow-billed Sheathbill (*Chionis alba*), captured at sea, presented by Captain H. W. Schlemann; a Bean Goose (*Anser segetum*), European, presented by Mr. W. H. St. Quintin; two Egyptian Kites (*Milvus aegyptius*) from Congoland, presented by the Rev. R. H. C. Graham; a Common Viper (*Vipera berus*) from Cornwall, presented by the Rev. John Harris; a Burchell's Zebra (*Equus burchelli*, ♂) from South Africa, deposited; two Black Hornbills (*Lophoceros nasutus*) from West Africa, a Yarrell's Curassow (*Crax carunculata*) from South-east Brazil, a Guan Ortalida from South America, a Double-ringed Turtle Dove (*Turtur bitorquatus*) from Java, purchased; an English Bull (*Bos taurus*) born in the Gardens.

*Erratum.*—In the classification of Bacteria given in the review of Prof. Migula's work on "Systematic Bacteriology," which appeared in last week's NATURE, the term "genus" should be substituted for "species."

#### OUR ASTRONOMICAL COLUMN.

THE COMPANION TO PROCYON.—As is well known Prof. Schaeberle discovered in November 1896 a companion to Procyon, which he suggested would prove the theoretical companion predicted by Bessel. This difficult object—difficult on account of its nearness to Procyon, not by reason of its faintness—has been satisfactorily observed at the Yerkes Observatory, thus confirming Prof. Schaeberle's measures, the motion of the object, and its suggested identity with Bessel's companion. We have now the following measures:

1896, November ...	P = 318.8 ...	D = 4.59
1897, October ...	P = 324.1 ...	D = 4.70
1898, March ...	P = 326.0 ...	D = 4.83

Prof. Barnard, who reports the observation, says that when the seeing is good, the companion star is a very conspicuous object and easy to measure with the bright star in the field unobscured. It was estimated to be one magnitude fainter than the old companion, which is of about the twelfth magnitude. This description, however, scarcely agrees with that of Prof. Schaeberle, who states that he made a measure of the star in November 1897, ten minutes before sunrise, and when looking along the outside of the telescope Procyon was no longer visible in the sky. This would imply that the comes was brighter than the thirteenth magnitude, and therefore more observations may be anticipated.

THE LIVERPOOL OBSERVATORY.—We have received the annual report of the director of the Liverpool Observatory, and are glad to see that he is making some attempt to break away from the mere meteorological observations, which have so long held sway at this observatory. The present attempt is a very small one, consisting merely in the observation of the Right Ascension of some of the circumpolar stars that Prof. Auwers has suggested should be continuously observed, with the view of affording more frequent opportunities, and more accurate determinations of the azimuthal error of transit instruments. Cometary observations have always formed a part of the routine work of this observatory, since the appointment of the present director. These are still being actively prosecuted, when the brightness of the comet permits. We notice also that the observatory is taking some part in the inquiries that are now going on in seismometry and the physics of the earth's crust.

SUNSPOT PERIODS AND NATURAL PHENOMENA.—In an article entitled "Le Soleil et la Nature" in the *Bulletin de la Société Astronomique de France* for June, M. Camille Flammarion brings together some very interesting data concerning the connection between the sunspot period and the yearly return of swallows, cuckoos and nightingales, and the flowering of chestnuts and lilacs. The observations have been extended over

several years. In the case of the chestnuts and lilacs, M. Flammarion himself commenced the series in the year 1871, and not only observed the same trees every year when they began to bud, but employed the same scale of observation from the first; the observations are thus homogeneous throughout. In the remarkable series of figures accompanying the article, M. Flammarion has grouped together the observations of three years, and plotted curves which undoubtedly suggest a connection between one another, and with that representing the number of spots on the sun. Further, when spots are most numerous migratory birds return to any one place earlier in the year than usual, and when spots are at a minimum they do not come back until a much later date. In the case of swallows this is very remarkable, as observations of their time of return have been made since 1853, a period of forty-five years. The curve has a period of about eleven years, and the times of the maxima and minima correspond well with those of the sunspot curve.

Another curious fact M. Flammarion points out is that the curves showing the temperature of the months of March and April and the mean temperature of the year are nearly identical for the period covered by the years 1876-97.

DOUBLE AND MULTIPLE SOUTHERN STARS.—On April 28 of this year we noted in this column that Dr. T. J. J. See had published in the *Astronomical Journal*, Nos. 431-432, some details of his plan of double and multiple southern stars, and the first part of a catalogue of new double stars. In the current numbers of the *Astro. Nachr.* (Nos. 3495-6) he publishes a further catalogue containing the measures of those systems made at the Lowell Observatory during the past year and four months. In many instances these measures are the first that have ever been made, and on that account a great part of the accompanying results possess a degree of interest equal to that of the first measures of new double stars. Messrs. W. A. Cogshall and S. L. Boothroyd have ably assisted Dr. See in this work.

#### THE ROYAL OBSERVATORY, GREENWICH.

ON Saturday last (June 4) the Astronomer Royal presented his annual report to the Board of Visitors of the Royal Observatory, Greenwich. As usual the numerous guests numbered among them many astronomers and other men of science; and the weather, though at times threatening, proved sufficiently fine to allow the buildings and instruments to be comfortably inspected. The following brief *résumé* is taken from the report:—

##### *Buildings.*

The buildings on the south side of the grounds, which form part of the new physical observatory, are now approaching completion, having been delayed somewhat by a failure in the supply of terra-cotta. Up to the present time the construction of the magnetic pavilion has not been commenced, although provision has been made for it and a good site selected. It is hoped that this will no longer be delayed, for the amount of iron recently used in the construction of the new physical observatory has a very decided effect on all the magnetic instruments in the old buildings. For some months past we have noticed a scaffolding outside the dome of the 28-inch. This we read was put up in February last in preparation for erecting a balcony round the building, but the plans were subsequently reconsidered and modified, and the work in consequence delayed. The electric light and telephone communication has been extended to the new buildings, and a new accumulator house is being constructed in the basement on the north-east side of the physical observatory to replace the shed in which they are now located.

##### *Transit Circle.*

A diagram on the wall of the transit room showed a curve which had been plotted, the points in the curve representing the number of R.A. observations and circle readings for each year from 1877. A glance at this curve showed that the number of transit observations during the more recent years has increased by leaps and bounds, and where in place of the usual 4000 observations per year in 1877-80, the number now has reached the figure 11,000. This year the transits, counting separate limbs as one observation, amount to 11,441, excluding determinations of collimation error 297 and level error 651. The circle readings were 10,626. The correction for the R.D. discordance