

THE additions to the Zoological Society's Gardens during the past week include two Magellanic Foxes (*Canis magellanicus*) from South America, presented by Baron Adolp Ott; a European Pond Tortoise (*Emys orbicularis*), European, presented by Mr. E. A. Hambro; two Smooth-headed Capuchins (*Cebus monachus*) from South-east Brazil, a Negro Tamarin (*Midas ursulus*) from Guiana, two Grant's Zebras (*Equus granti*) from North-east Africa, four Hutchin's Geese (*Bernicla hutchinsi*) from Arctic America, six Dark-green Snakes (*Zamenis gemonensis*), two Lacertine Snakes (*Coelpeltis monepessulana*), a Vivacious Snake (*Tarbophis fallax*), European, deposited.

### OUR ASTRONOMICAL COLUMN.

NEW SPECTROSCOPIC BINARIES.—In a paper communicated to the Astronomical and Astrophysical Society of America Prof. Frost and Adams announce the discovery of six stars of the Orion type having variable radial velocities, and two or three stars of the same type which are supposed to be spectroscopic binaries.

Of the former,  $\delta$  Ceti shows a range of velocity from +6 to +16 km. per second, and its period is short; the velocity of  $\zeta$  Tauri has a range of +7 to +34 km. per second, and a probable period of about fourteen days; the spectrum of this star is rather peculiar, in that the hydrogen lines  $\beta$  and  $\gamma$  are sharp and strong, whilst the other lines (some of them metallic) are faint. In the case of  $\nu$  Eridani a variation in the velocity of +3 to +26 km per second is indicated.

Two or three other stars of the Orion type are suspected of having variable radial velocities, but the facts are not yet fully established. The proportion of spectroscopic binaries found amongst the stars of this type which have hitherto been examined is 1 : 5 (*Science*, n.s., vol. xvii. No. 426).

THE SPECTRUM OF COMET 1902 *b*.—In a communication to the March *Bulletin de la Société de France*, M. de la Baume Pluvinel discusses the spectra of comet 1902 *b*, which he has obtained, using a prism of  $20^\circ 18'$ , mounted in front of an objective the focal length of which was four times its aperture.

In a spectrum obtained on October 24, with one hour's exposure, the positions of fifteen condensations (*i.e.* images of the comet) were found to be measurable; the spectrum of Vega was photographed on both sides of the cometary spectrum as a comparison.

Two condensations at  $\lambda 472$  and  $\lambda 389$  respectively were found to be by far the strongest, these radiations evidently accounting for almost all the actinic light emitted by the comet, and, therefore, in photographing such objects it would be advisable to use an objective which brings these two radiations to the focus simultaneously.

Of the other condensations measured, the most important one extends from  $\lambda 409.2$  to  $\lambda 400.0$ , and was far more intense on a negative obtained on October 13, when the comet was at a greater distance from the sun, than on the one obtained on October 24.

The conclusion arrived at from the detailed examination and discussion of the spectrum is that in the light emitted by this comet occur (1) the chief radiations emitted by carbon in the electric arc, viz.  $\lambda 364$ ,  $\lambda 518$  and  $\lambda 472$  belonging to the spectrum of hydrocarbons, and  $\lambda 389$  belonging to the cyanogen (?) spectrum; (2) the radiation  $\lambda 431.2$ , which appears in the flame spectra of the hydrocarbons; and (3) a group of radiations,  $\lambda 409.2$  to  $\lambda 400.0$ , which corresponds to no carbon group.

MISSING ASTEROIDS.—In *Circular* No. 69 of the Harvard College Observatory Prof. E. C. Pickering directs attention to the fact that of the five hundred minor planets already discovered, sixty-eight have not been observed for the last five years, and the last observations of about twenty-five of them were made from ten to thirty years ago. He then proceeds to point out the danger that may arise from allow-

ing these objects to remain unobserved, and their elements and ephemerides uncomputed, for an observer can never be certain whether the object he is observing is a new discovery or not, and so might pass over such an object as Eros, supposing it to be one which had been recorded previously.

Prof. Pickering concludes that it is a much more important work to rediscover all those minor planets previously recorded and determine their elements than to go on adding to the list by the discovery of new ones. Acting on this conclusion the Harvard observers prepared a list of all the asteroids, brighter than the eleventh magnitude, which have not been observed during the last five years, and have already photographed (21) Lutetia and (22) Kalliope (on plates obtained on January 21 and 22), which were last observed in 1897 and 1896 respectively, and they find that the error of the ephemeris given for the latter is large enough to render the finding of this object a difficult matter.

A RICH NEBULOUS REGION IN THE CONSTELLATION LYNX.—Whilst pursuing a photographic search for the minor planet (475) Occlo with the Bruce telescope, Prof. Max Wolf has discovered from his plates a region situated on the borders of Ursa Major and the Lynx which is especially rich in small nebulous patches. One particularly dense region is about the point  $\alpha=8h. 2m.$ ,  $\delta=+46^\circ 5'$  (1855), the centre lying between the two stars B.D.+48°.1366 (8.5m.) and B.D.+48°.1368 (8.4m.), where, in a circle having a radius of thirty minutes of arc, he was able to count at least forty small faint nebulae.

Two of the nebulae, having the positions  $\alpha=8h. 3'0m.$ ,  $\delta=+46^\circ 25'$  and  $\alpha=8h. 3'7m.$ ,  $\delta=+46^\circ 9'$  respectively, are worthy of particular notice. The first was observed by W. Herschel, and appears in his catalogue as iv.55. It is bright, apparently round, has a diameter of about  $1'$  and several condensations, and should appear as a beautiful object in a large reflector.

So far as Prof. Wolf is aware, the second has hitherto not been recorded. It has a length of about  $3.5$  minutes of arc, is rectilinear and very narrow, and is moderately bright. It includes in its northern boundary a faint star the position angle of which is  $350^\circ$ , and lies about  $1'$  west of the star B.D.+46°.1371 (9.3m.) (*Astronomische Nachrichten*, No. 3847).

### THE BIRDS OF BEMPTON CLIFFS.

A VERY interesting and beautifully illustrated account of the birds frequenting the chalk cliffs of Bempton, Yorkshire, and of the egg industry carried on by the natives, appears in part i. of the *Transactions* of the Hull



FIG. 1.—Newly-hatched Puffin. (From the "Birds of Bempton Cliffs.")

Scientific and Field Naturalists' Club. The author, Mr. E. W. Wade, commences by waxing enthusiastic over the wonderful sight presented by these precipitous cliffs when they are visited, in spring and summer, by swarms of seabirds, among which guillemots are now predominant. In