

MR. THOMAS EDWARD, the Banff naturalist, has reprinted in a separate form some useful and interesting papers on the Protection of Wild Birds. The pamphlet is to be had at the *Banffshire Journal* Office.

THE additions to the Zoological Society's Gardens during the past week include an Egyptian Gazelle (*Gazella dorcas*) from Egypt, presented by the Earl of March, F.Z.S.; a Common Genet (*Genetta vulgaris*), South European, presented by the Rev. F. P. Voules; a Giant Toad (*Bufo agua*) from Brazil, presented by Mr. Carl Hagenbeck; a Long-snouted Snake (*Passerita mycterizans*) from India, presented by Mr. H. H. Black; an Amherst's Pheasant (*Thaumalea amherstiae*) from Szechuen, China, a Black Swan (*Cygnus atratus*) from Australia, purchased; a Tiger (*Felis tigris*), a Bactrian Camel (*Camelus bactrianus*), a Sambur Deer (*Cervus aristotelis*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

A NEW VARIABLE STAR.—On July 26, 27, and 29, 1783, D'Agelet observed a star which he twice estimated 6m., and on the last night 6.5m.; it is No. 5057.9 in Gould's reduced catalogue, the mean of the three observations giving for 1800, R.A. 19h. 23m. 47.57s. and Decl. + 17° 19' 42".8. The only subsequent observation we have yet found of this star is in the *Durchmusterung*, where it is rated as low as 9.4m.; there is consequently a high probability that it will prove to be a remarkable variable. The position brought up to the beginning of 1880 will be R.A. 19h. 27m. 22.1s., Decl. + 17° 29' 28". D'Agelet's original observations will be found at pp. 542, 544, and 546 of the *Histoire Cèleste* of Lalande.

MINIMA OF ALGOL, ETC., IN 1880.—Prof. Julius Schmidt has published his observations, or rather the results of his observations, of Algol and other variable stars, made at Athens during the past year. On comparing his epochs of minima with the formula in Prof. Schonfeld's last catalogue, it will be found that according to the most completely determined minima the calculation is too late by nearly half an hour. But the differences between calculation and observation are very irregular, so that if we take a mean of the whole, the true minimum would appear to be earlier than that computed by only nineteen minutes. The minima between August 28 and December 21 are here compared.

According to the observations of the same indefatigable astronomer *Mira Ceti* was at a maximum between July 20 and 25, but in 1880 it only attained about 4.2 m. A maximum of *R Leporis* occurred about November 9; the determination is not very certain. The intervals between maximum and minimum, and *vice versa* of a *Herculis* were as irregular as usual.

THE RED SPOT UPON JUPITER'S DISK.—Dr. Jedrzejewicz has published some inferences from observations for ascertaining the time of rotation of the eastern extremity of the large red spot upon the disk of Jupiter, made at his private observatory at Pionsk during the winter of 1880-81. The instrument employed is a refractor six inches aperture, with powers 225 to 300. In December he measured the length of the spot 9".8, and considers that his own observations compared with those of Prof. Schmidt at Athens, indicate that the length of the spot remained unchanged during the winter. On this assumption he finds for the time of rotation 9h. 55m. 34.414s. \pm 0.13s, by 174 rotations between November 25, 1880, and February 5, 1881. Prof. Schmidt from 1021 rotations between July 23, 1879, and September 17, 1880, obtained the value 9h. 55m. 34.422s. \pm 0.05s. for the middle of the spot. In 1862, by observations upon a spot which he says was much darker and a more favourable object for the purpose than the spots observed by Airy and Mädler in 1834-35, and which was not much larger than the shadow of the third satellite he had found for the time of rotation 9h. 55m. 25.684s. agreeing with the previously-determined values. While the period from observations of the red spot is 9s. greater, Prof. Schmidt remarks that it agrees very nearly with that already obtained by Mr. Pratt.

THE MINOR PLANETS.—It appears that the object detected by Herr Palisa at the new Observatory of Vienna on the 23rd of

last month, and which was announced as No. 220 of the small-planet group, may prove to be No. 139 *Juewa*, which had not been observed since 1874. It was discovered by the late Prof. Watson at Pekin on October 10 in that year, while he was engaged upon one of the United States expeditions for the observation of the transit of Venus, and as was reported at the time, without the aid of a chart of telescopic stars, but from his memory of their configuration about the particular spot occupied by the planet. It was observed on November 8 by Rümker at Hamburg, but the length of observation was not sufficient to determine the mean motion with any degree of accuracy; hence although the elements had been several times brought up to more recent dates by Watson, the planet had not been recovered up to last month.

By the last Berlin circular it would seem that *Ismene* will fall little short of *Hilda* in the length of its revolution, and these two minors will thus stand out as exceptional members of the group. By the latest elements the period of *Hilda* is 2860 days or 7.832 years, and that of *Ismene* 2854 days or 7.814 years.

Calculation has assigned the shortest period to No. 149 *Medusa*, but this awaits confirmation, perhaps in the next summer, when the planet should again come into opposition according to the imperfect elements at present available.

PHYSICAL NOTES

M. PLANTAMOUR continues to study with his sensitive levels the phenomena of periodic rise and fall of the ground which he has observed in Switzerland. He believes he has established a connection between these periods and those of the changes of temperature of the earth's surface, there being an annual change of level in an east-west direction corresponding with the mean temperatures of the surface during the year.

M. ROSENSTIEHL concludes from his researches on the sensations of colour recently noticed that the three fundamental colour sensations of the Young-Helmholtz-Maxwell theory correspond to the following tints of the pure spectrum. *Orange-red*, three-fourths of the distance from C to D amongst the Fraunhofer lines, a *yellow-green* three-quarters of the distance from D to E, and a *blue* situated at one-third from F towards G. The principle upon which this selection is made is that the selected tint fulfils the following conditions: (a) it is equidistant between two tints which are complementary to one another; (b) it produces with either of the other selected tints another colour having a minimum of white admixed with it. Thus the yellow-green chosen is midway between that yellow and that blue which produce the best white with one another, and it gives with the selected orange-red a yellow more intense than any known yellow pigment under equal illumination, and with the selected blue gives a green more intense than the richest green pigment.

M. HENRI BECQUEREL observes that the specific magnetism of ozone exceeds that of oxygen, and is much greater than could be accounted for by the difference in density of these two allotropic forms of the gas.

IN view of recent terrible colliery explosions in Belgium, M. Cornet has called attention (in the Belgian Academy) to a possible interference of winds, blowing in an inclined direction, with the proper ventilation of mines. Most of the "fiery" Belgian mines have two shafts, one for raising the coal and for descent of air, which, passing along the galleries, is drawn up the other shaft by a ventilating engine. The orifice of the latter shaft is generally (unlike that of the other) unsheltered by buildings; it debouches directly in the air a little above the ground. Obviously, then, a strong wind, blowing with downward inclination towards this orifice, might seriously affect the ventilating action. It is noted that one explosion in Hainaut on November 19, 1880, followed a night of very high wind, which M. Cornet shows to have been capable of depressing ventilation considerably. Mines with large sections are more dangerous than others in atmospheric perturbations. The true remedy, however (in the author's opinion), is not increasing the resistance to the air-currents, but sheltering the orifices of the ventilating shafts against descending winds.

IN a recent paper on the optical structure of ice (to the Freiburg Society of Naturalists) Prof. Klocke finds that while in the ice individuals the plane of the secondary axes is fixed by the position of the principal axis, they are subject to no law as to direction in that plane.

THE phenomenon of *verglas* occurred at Urbino in Italy twice in January; and from his observations of it Prof. Serpieri con-