

THE Pilot Chart of the North Atlantic Ocean for July, issued by the Hydrographic Office of Washington, contains an article on tropical cyclonic storms or West India hurricanes which are prevalent at this season of the year. From a table showing the number of storms experienced between 1885 and 1898, it is seen that the greater number occur between August and October. The nature and mean path of the hurricanes are exhibited by a diagram. In its earlier stages, the centre of the path of the storm has a certain amount of westing, due to the general westward motion of the atmosphere in the low latitudes in which the storm originates, and the whirl is small, probably less than 100 miles in diameter, but its growth is rapid, so that in the middle and higher latitudes it may attain a diameter of 500 or even 1000 miles. The velocity of progression along the track of the disturbance reaches from twenty to thirty miles an hour in high latitudes, while the velocity of the whirl itself, in a direction against the hands of a watch, attains the force of a hurricane.

THE interesting and useful "Glossary of Popular Local and Old-fashioned Names of British Birds" contained in "A Dictionary of Bird Notes," by Mr. Charles Louis Hett, has been issued separately by Jackson, of Brigg.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus*, ♂) from India, presented by Miss Nesta Bevan; a Black-faced Spider Monkey (*Ateles ater*) from Eastern Peru, presented by Mrs. K. E. Mackenzie; two Campbell's Monkeys (*Cercopithecus campbelli*, ♂ & ♀) from West Africa, presented by Captain F. R. B. Parmeter; a Mozambique Monkey (*Cercopithecus pygerythrus*) from East Africa, an Arabian Gazelle (*Gazella arabica*) from Arabia, presented by Mr. B. T. Ffinch; two Common Foxes (*Canis vulpes*) from Russia, presented by Mr. A. H. Britten; an Arctic Fox (*Canis lagopus*) from Iceland, presented by Mr. M. Magnusson; five Common Hedgehogs (*Erinaceus europaeus*), European, presented by Mr. Geo. Long; three Chipping Squirrels (*Tamias striatus*) from North America, presented by the Rev. A. E. Tollemache; a Common Peafowl (*Pavo cristatus*, ♂) from India, presented by Miss A. S. Heldmann; two Climbing Anabas (*Anabas scandens*) from India, presented by Mr. P. Barford; two Rheas (*Rhea americana*, white var.) from Argentina, two Syrian Bulbuls (*Pycnonotus xanthopygos*) from Syria, an European Pond Tortoise (*Emys orbicularis*), European, deposited; two Rose-coloured Pastors (*Pastor roseus*), two Indian Mynahs (*Acridotheres ginginianus*) from India, two Bamboo Partridges (*Bambusicola thoracica*) from Northern China, two Lunulated Honey-eaters (*Melithreptes lunulatus*), two Pied Grallinas (*Grallina australis*), two Musky Lorikeets (*Glossopsittacus concinnus*) from Australia, purchased; a Japanese Deer (*Cervus sika*, ♀), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

TEMPLE'S COMET 1899 c (1873 II.).

Ephemeris for 12h. Paris Mean Time.

1899.	R. A.			Decl.	Br.
	h.	m.	s.		
July 20 ...	20	39	34.3	... -18° 4' 26"	... 3'570
21 ...	40	46	1	... 18 37 9	
22 ...	41	57	9	... 19 10 4	
23 ...	43	9	5	... 19 43 9	... 3'662
24 ...	44	21	1	... 20 16 22	
25 ...	45	32	6	... 20 49 38	
26 ...	46	44	0	... 21 22 55	
27 ...	20	47	55.4	... -21 56 9	... 3'698

HOLMES' COMET 1899 d (1892 III.).—Prof. C. D. Perrine gives full details of his rediscovery of the comet in *Astr. Journal*, No. 465. It was found with the 36-inch refractor,

using a power of 270. It appeared as a round nebulous mass about 30" in diameter, with only a slight brightening at the centre. The conditions were good, the sky being very clear and the star images steady. The object was very faint, not brighter than 16 mag., and very difficult to observe, so that the probable error of observation of its place was larger than usual.

DYNAMICAL THEORY OF NEBULÆ.—In No. 465 of the *Astronomical Journal*, Dr. E. J. Wilczynski gives an extended explanation of a dynamical theory of ring and spiral nebulae which he first brought forward in 1896 (*Astro.-Phys. Journal*, vol. iv. p. 97, 1896). He starts with the assumption that the primordial nebula exists either as an assemblage of meteorites or as a gaseous mass obeying the laws of hydrodynamics. Then, in some unexplained way, each particle is to describe a circular orbit about the common centre of gravity, at which point there may or may not be a condensation. Such an arrangement is not necessarily stable, the limit depending on the relative ratios of the masses and distances of the individual particles, and the ratio of the mass of the central controlling body to its distance from the swarm. If these conditions allow stability the body may condense to a star, single or double. If the system be unstable, however, then on applying Kepler's third law to the revolving particles it is found that the inner members, owing to their greater angular velocity, constantly advance with respect to the outer ones, and after an interval the particles originally lying along a radius of the swarm will be drawn out into a spiral curve, as is actually the case in the bodies known as spiral nebulae. According to this view, the age of a nebula would be to some extent indicated by the number of its coils, and the author gives an interesting suggestion that this might be investigated by a minute comparative examination of all photographs of spiral nebulae of different dates. The paper concludes by indicating the possibility of determining the law of rotation of these bodies by a combination of spectroscopic and photometric observations.

THE NATAL OBSERVATORY.—The annual report of Mr. E. Nevil, Government Astronomer of the Natal Observatory at Durban, consists chiefly of the detailed meteorological observations made at the institution. The staff consists of the director, one senior astronomical assistant, one junior astronomical assistant, and one meteorological assistant. The astronomical equipment includes an 8-inch Grubb equatorial refractor, a 3-inch Troughton and Simms transit instrument, sidereal and mean time clocks, 3-inch portable equatorial refractor, and an automatic signal transmitter and recorder. Owing to a reduction in the vote to the observatory, much of the work has had to be put aside.

The system of time signals established over the Colony has been carried on without alteration, this being facilitated by the erection of new wires. Since the appointment of the astronomer in 1882 there has been no official residence, the computations, &c., having been mostly made in the open air.

This is at last to be remedied by the erection of a residence, all the fixtures, water supply, &c., however, being provided by the astronomer himself.

TEMPERATURE CHANGES IN YERKES OBJECT-GLASS.—Prof. Barnard has several times made series of measures with the large telescope to find if the changes produced in the instrument by variations in temperature were of sufficient amount to necessitate their consideration in delicate investigations. During the last year observations have been made of the focus at temperatures varying from -22° F. to +80° F., the range thus being 102° (*Astr. Journal*, No. 462). The means of the observations made on nineteen nights show a marked difference in the focus, and it was found that the object-glass shortened 0.26 inch more than the steel tube which carried it. Micrometric measures of the difference in declination between the stars *Atlas* and *Pleione* of the Pleiades showed a decrease of nearly 0.2 (from 0.676 during July-September to 0.491 during January-February).

From the result of these experiments Prof. Barnard thinks that for exact work, such as parallax, with a large glass in a variable climate, these minute changes ought to be determined and taken into account.

In addition to these visual observations, careful determinations of the changes in the colour-curve during wide extremes of temperature are being carried on by Prof. Frost and Mr. Ellerman.