

OCTOBER is a transition month so far as winds and distribution of atmospheric pressure are concerned in the East Indian Seas, and the Monthly Meteorological Chart published by the Meteorological Office shows that a considerable change is taking place in the general meteorological conditions. To the north of the equator northerly winds are decidedly asserting themselves and the south-west monsoon of the summer months is giving way. In the Bay of Bengal and in the Arabian Sea, October and November are the most stormy months of the year, and cyclones are more numerous than at any other period. The low barometric pressure which has prevailed over the land to the north of India is giving place to higher barometer readings, which causes a diametrically opposite wind circulation. The chart contains an interesting note of sea phosphorescence in the vicinity of Madras on July 3. At 2.10 a.m., in latitude $12^{\circ} 43' N.$, longitude $30^{\circ} 34' E.$, the steamship *Clan Ogilvy* (Capt. W. M. Porterfield) passed through what appeared to be a gigantic wheel, with many "curved" spokes, revolving the same way as the hands of a clock. The phenomenon lasted quite ten minutes, and is said to have been caused by phosphorescence. The wheel was travelling to the eastward. As each "spoke" passed, the ship was lit up.

THAT the war has done a great deal to show the value of the spectroscopic examination of metals and alloys is proved in an article on the subject in *La Nature* (September 6). Considerable information was gleaned regarding the composition of secret German alloys which were investigated by A. de Gramont by his method, and the same remark applies to the composition of the metal used by the enemy in the manufacture of the long-range shells fired upon Paris. The spectroscopic method would seem to be of particular value when applied to the examination of the constituents of alloy steels and commercial alloys, and, as the writer states, is capable of great expansion in this direction.

MESSRS. LEVER BROS., LTD., Liverpool, have lately published an interesting "Cattle Food Calendar" for 1919-20. This contains articles on the scientific side of agriculture written by men competent to speak on their respective subjects. Further, it is illustrated by photographs and pictures of many of the important operations in agricultural science. Among the articles we note "How Mendelism May Help the Stock-breeder," and shorter, but equally interesting, articles on "The Work of the Board of Agriculture," "Plant Diseases," "The Relation between Skin-temperature and the Fattening Quality of Cattle," "The Official Seed-testing Station at the Food Production Department," "The Work of the Rothamsted Experimental Station," "The Breeding of New Wheats," "Warble Maggots in Cattle," "Investigation and Research in Dairying," "Contagious Abortion in Cattle," "Horticultural Research," "The Cheshunt Experimental and Research Station," and "Forestry." The list covers a wide field, and the articles give brief, but useful, summaries of the application of science to agriculture.

OUR ASTRONOMICAL COLUMN.

COMET 1919c.—The following is a continuation of the ephemeris of comet 1919c (Metcalf-Borrelly) for Greenwich midnight:—

		R.A.			N. Decl.				
		h.	m.	s.	°	'	"	Oct.	h. m. s.
Oct.	9	15	38	25	5	11	1	21	16 10 14
	13	15	48	38	3	4		25	16 21 39
	17	15	59	14	0	54		29	16 33 30

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Log r and log Δ on October 9, 0.1574, 0.3052; on October 25, 0.1106, 0.2884. The comet is an evening object, and is getting inconveniently near the sun.

A FAINT NOVA.—Miss Mackie announces that she has discovered a nova from a study of the Harvard photographs (Harvard Bulletin 691). Its position is R.A. 20h. 3m. 4s., N. declination $17^{\circ} 24' 3''$ (1900). It follows a 14th magnitude star by 0.2s. It reached its maximum, 7.2 magnitude, on November 22, 1913, and has now sunk to below 14.5. The position is in Sagitta, within the limits of the galaxy; it is only about 26° from Nova Aquilæ.

HINDU SPHERICAL ASTRONOMY.—Mr. G. R. Kaye has published a paper on "Ancient Hindu Spherical Astronomy" in the Journal and Proceedings of the Asiatic Society of Bengal (vol. xv.). In this he summarises, with the aid of modern mathematical formulæ, the fundamental portions of the principal classical astronomical texts, which date from between A.D. 498 (the *Aryabhatiya*) and about A.D. 1000, when the redaction of the *Surya Siddhanta* now extant was written. Indian trigonometry is, like Indian astronomy, of Greek origin, but the Indians developed the methods received from the Greeks in various ways. There seems to be no doubt that the Indians were the first to introduce the use of sines instead of chords, and to compute tables of sines. But they never went further, and did not make use of the tangent function. They never give a proof of any rule they enunciate. The title of Mr. Kaye's paper refers to spherical astronomy only, but the author also gives a short account of the Hindu notions of the motions of the planets, though this has been done by several previous writers. The Hindu planetary theories differ in several details from those of Ptolemy, and were probably mainly derived from Alexandrian writings from the period between Hipparchus and Ptolemy, now lost. Though there is nothing particularly new in Mr. Kaye's paper, it gives a convenient summary of the principal doctrines taught in the great Indian astronomical text-books.

STELLAR CLUSTERS.—Dr. and Mrs. Shapley contribute another paper to the *Astrophysical Journal* for July on stellar clusters. They give a table of forty-one clusters, of which thirty show ellipticity, eleven are sensibly circular, and one is unsymmetrical. The most elliptical cluster is Messier 19, in which the greatest diameter is about twice the least; this is a much lower degree of flattening than that in the galaxy or the spiral nebulae. In the case of the circular clusters, the form may be real or it may be due to our being situated near their polar diameters. There is some evidence that clusters near the galactic plane tend to have their equatorial planes parallel to it. At a distance from the galactic plane this no longer holds.

THE AURORA OF OCTOBER 1.

THERE was noteworthy auroral activity on the night of October 1. The display started in the early evening and lasted until well after midnight. As seen in the south of England, the aurora was generally of the glow type. The absence of streamers, etc., was commented on by Mr. W. H. Dines, of Benson Observatory, but Capt. J. E. Cowper noted streamers at Shanklin, Isle of Wight, soon after 22h. 15m.¹ The colour of the glow, which was comparable in effect with bright moonlight, was reported as "pale white" at Benson, "greenish-yellow" at

¹ According to the *Times* of October 3 there was a brilliant display with streamers seen from Worcester Park about 1.30 on October 2. "Curtains" were seen at Newport between 21.30 and 23 on October 1.