

perpetual attention to keep them from dust, and are certain to be broken sooner or later. One glass reticle ought to last a hundred years. The circle is read by 8 microscopes, 4 for each pier. This fine instrument, described in much detail, is especially fitted for fundamental work; the telescope will show 9th magnitude stars in a bright field. There is no measurable difference between the pivots; they are, like nearly every other essential part of the instrument, very near to mechanical perfection. The instrumental constants of the circle and collimators have been determined very frequently during a period of about six months. Prof. Holden expresses his opinion freely as to the merits or demerits of the circle, indicating a few points in which improvements might easily be made. The cost of this instrument, every thing included, was £890 (4,274 dollars).

Besides other matter of interest contained in this volume, there is a list of 111 new double stars, and 2 nebulae, encountered in sweeps; observations of 119 red or coloured stars seen in the same sweeps; occultations of 40 stars by the moon; star-gauges of Sir William Herschel, reduced to 1860, first and second series; counts of stars from the celestial charts of Dr. C. H. F. Peters and others; meteorological observations at Madison; list of auroras. An appendix contains the catalogue of the Woodman Astronomical Library.

The Washburn Observatory possesses a 15-in. equatorial; a portable transit instrument, two clocks, sidereal and mean time, the 6-in. equatorial that belonged to Mr. S. W. Burnham, who discovered with it some 400 of his double stars; and an auroral spectroscope is being made for observing auroras and the zodiacal light.

Our Sea-marks; a Plain Account of the Lighthouses, Lightships, Beacons, Buoys, and Fog-signals maintained on our coasts for the guidance of Mariners. By E. Price Edwards. With numerous illustrations. Longmans, Green, & Co. 1884. pp. 192.

This is a pleasantly written and interesting work on a very important subject. It has a good map, showing the ranges of the principal light-houses and lightships on the coasts of the British Islands. From the list of the principal coast lights, corrected to March, 1884, the numbers of which correspond with those on the chart, we find that in England there are 118 coast lights; in Scotland, 64; in Ireland, 63; in the Isle of Man, 4; and in the Channel Islands, 7; making 256 in all. Price of the book is not marked.

DUN ECHT CIRCULAR, No. 97.

Professor Krueger telegraphs from Kiel, at midnight August 31, "Variation in Andromeda Nebula found by Dr. Hartwig (of Dorpat), starlike nucleus, please look for it."

RALPH COPELAND.

Lord Crawford's Observatory,
Dun Echt: 1885, September 1.

DUN ECHT CIRCULAR, No. 98.

A code telegram from Professor Krueger, of Kiel, announces that a suspicious object was discovered at [by?] Brooks, on August 31, and was observed by Professor Pickering of Cambridge, U.S., as follows:—

Planets for October.

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Greenwich M. T.
1885, Sept. 27.R. A.
13h. 42m.Decl.
N. 36° 37'The daily motions were *minus* 3m. 12s. and *plus* 19'.

It was found to be a circular comet, as bright as a 9th magnitude star, 2' in diameter, with some central condensation, but no tail.

Respecting the new star in Andromeda, it is announced from Brussels that at the commencement of August, the stellar nucleus was not visible. Mr. Isaac W. Ward, however, reports having seen it on August 19th at 11 p.m. It was also seen at Rheims, by M. Lajoie, on August 30, and also independently by Mr. G. T. Davis, of Theale, near Reading, on September 1st.

The Dun Echt telescopes show it as a veritable $7\frac{1}{2}$ magnitude star, with a fairly continuous spectrum. On September 3rd Lord Crawford and the undersigned found that the *Nova* is most probably situated some 1s.6 preceding and 5" south of the old nucleus, which is much overpowered by the light of the star.

RALPH COPELAND.

Lord Crawford's Observatory,
Dun Echt: 1885, September 5.

THE PLANETS FOR OCTOBER.

AT TRANSIT OVER THE MERIDIAN OF GREENWICH.

Planets.	Date.	Rt. Ascension.	Declination.	Diameter.	Meridian Passage.
		h. m. s.	° ' "		h. m.
Mercury ...	1st	11 58 34	S. 2 12	5".4	23 13.2
	9th	12 50 0	S. 3 49½	4".8	23 33.1
	17th	13 33 46	S. 9 0	4".6	23 51.4
	25th	14 22 49	S. 14 22½	4".6	0 6.7
Venus ...	1st	14 56 31	S. 17 54½	14".3	2 14.6
	9th	15 34 52	S. 20 49½	14".9	2 21.4
	17th	16 14 18	S. 23 11	15".7	2 29.3
	25th	16 54 35	S. 24 54½	16".6	2 38.0
Saturn ...	1st	6 44 59	N. 22 18½	16".8	17 50.5
	9th	6 35 54	N. 22 17½	17".0	17 20.0
	17th	6 36 18	N. 22 17	17".2	16 48.9
	25th	6 36 12	N. 22 17	17".4	16 17.4
Neptune ...	4th	3 30 20	N. 17 10		23 18.3
	20th	3 28 31	N. 17 3½		22 19.0

Mercury rises about an hour before the sun, at the beginning of the month, the interval decreasing.

Venus sets, on the 1st, about an hour after the sun, the interval increasing.

Saturn rises about 9.30 p.m. at the beginning of the month, and afterwards earlier each night.