

photographs which I have taken between the date of the appearance of the *Nova* and December 25, there is nothing upon them indicative of a disturbance, such as we might expect to see recorded if a body of the magnitude and velocity of the *Nova* had rushed into a nebula, or into a swarm of meteors. On the other hand, it might be argued that the great velocity of the star would carry it through without causing such great disturbance at right angles to the line of flight, according to dynamic law, that a projectile at a high velocity will penetrate through a plate of iron, or of glass, without fracturing them in the manner that a projectile would at a low velocity. On this hypothesis the inrush of the nebulous or meteoric matter, to fill the vacuum created by the star, might account for the peculiar spectra which were observed.

Photograph of the Nebula η I. 55 Pegasi. By Isaac Roberts,
D.Sc., F.R.S.

The photograph of this nebula, now presented, was taken with the 20-inch reflector on 1892 October 22, and exposure of 4 hours. The scale is 30 seconds of arc to one millimetre. R.A. $23^{\text{h}} 0^{\text{m}}$; Decl. N. $11^{\circ} 45'$, at the centre.

The nebula is No. 4892 in the General Catalogue, and is described as pretty bright, considerably large, much elongated towards 12° between two stars, irregularly round, two or three stars in it, pretty generally much brighter in the middle. It is figured in the *Phil. Trans.*, 1833, pl. 14, as a faint ray, with a faint star near each extremity.

Lord Rosse, in his "Observations of Nebulæ and Clusters," p. 170, describes the appearance of the nebula, and it is figured in the *Phil. Trans.* for 1850, pl. 36, fig. 4. The drawing shows a bright broad boundary on the following side, and on the preceding side of it a circle filled with spiral convolutions, strongly marked. A star is shown in the centre of the convolutions, but later observations, made between the years 1849 and 1876, do not with certainty confirm the spiral structure.

The photograph shows the nebula to be a faint ellipse, with a dense broad line, curved at both ends, forming the major axis. There is a star of about 15th magnitude in the centre of the axis, and there is also a fainter star in the preceding semi-ellipse, but there is no structure visible within it, such as that shown on the drawing by Lord Rosse, and it does not show the semi-ellipse on the following side, which is faintly visible on the photograph. The object is altogether a difficult one, either to see or to photograph.

Photograph of the Cluster H VI. 30 Cassiopeiæ.

By Isaac Roberts, D.Sc., F.R.S.

The photograph now presented was taken with the 20-inch reflector on 1892 November 26. Exposure 90 minutes. Scale 30 seconds of arc to one millimetre. R.A. $23^{\text{h}} 52^{\text{m}}$; Decl. N. $56^{\circ} 8'$, at the centre.

The following description is given by Sir John Herschel in the *Phil. Trans.* for 1833, p. 480 :—"A most superb cluster which fills the field and is full of stars; generally brighter in the middle but no condensation to a nucleus. Stars 11th to 18th magnitude.

Lord Rosse, in his "Observations of Nebulæ and Clusters of Stars," p. 177, describes the cluster as very coarse; stars quite distinct and no visible nebulosity; dark holes and jagged branches, but no regular arrangement.

The photograph shows the cluster to be in fair accord with the descriptions given by Herschel and Rosse as far as they apply; but in addition it shows patterns, consisting of lines, wreaths, and curves of stars, which on the negative are very prominent features. The photograph confirms the eye observations, that there is no nebulosity in the cluster, and, since it shows every star in its true relative position and magnitude, down to about the 16th, the further evolution of this cluster may henceforth be strictly followed by us and by our successors.

The Eclipse of the Moon, 1892 November 4-5. Observed at Sydney Observatory.

(Communicated by H. C. Russell, B.A., F.R.S., Government Astronomer.)

The weather was most unpromising for observation, owing to the ever-changing and too abundant clouds; however, at $11^{\text{h}} 45^{\text{m}}$ through a break in the clouds, a slight shade, the effect of the penumbra, was visible on the eastern limb of the Moon, and the first contact with the shadow was seen at $12^{\text{h}} 14^{\text{m}} 20^{\text{s}}$. At $12^{\text{h}} 17^{\text{m}}$ the first photograph was taken, and a few minutes later an extensive cirrus-cloud covered the Moon, and a large halo was visible for a time. The cloud continued to increase, and interfered very much with observation. There was no sign of coppery colour, the shadow being so dark—a very dark brown, almost black—that it entirely blotted out the Moon's limb and markings on the surface, which are usually seen through it on such occasions. At $12^{\text{h}} 43^{\text{m}}$ a partial break in the cloud gave opportunity for another photograph, exposed 30^{s} . At $12^{\text{h}} 53^{\text{m}}$ the Moon was half eclipsed and the clouds had become thicker, so much so that no features of the Moon were visible through the shadow or eclipsed part of the Moon. At $12^{\text{h}} 55^{\text{m}}$ another photograph was taken, and the exposure was increased to 1^{m} .