

10. The present note is not concerned with several matters of great importance; as, for instance, the possibility of securing all the stars on the print which are on the original plate. In the print above measured faint stars have certainly been lost. For the present I am only concerned with the value of such prints, in default of the original plate, for getting star-places with considerable accuracy. The experiments will be continued, and a fuller account of them given later. But if the question of the publication of the Chart is to be dealt with at the next meeting of the Permanent Committee, it is not too early to draw attention to the possibilities contained in paper prints, which have so many advantages over glass copies in the way of convenience.

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*Photograph of the Nebula H $\eta$  VI. 41 and a new Nebula in Draco.*  
By Isaac Roberts, D.Sc., F.R.S.

The photograph of the spiral nebula H $\eta$  VI. 41 *Draconis*, R.A. 17<sup>h</sup> 33<sup>m</sup>, Decl. 75° 48' north, and of the new elliptic nebula, R.A. 17<sup>h</sup> 26<sup>m</sup> 21<sup>s</sup>, Decl. 75° 8'·6 north (epoch 1860), was taken with the 20-inch reflector on 1895 September 11, with an exposure of the plate during 60 minutes, and the copy now presented is enlarged to the scale of 1 millimetre to 15 seconds of arc.

The nebula H $\eta$  VI. 41 is N.G.C. No. 6412, G.C. No. 4321, and is described by Sir J. Herschel as a globular cluster, considerably large, round, very gradually brighter in the middle, partially resolved.

The photograph shows it to be a spiral nebula, with a bright stellar nucleus, which appears to be elongated in *north following* and *south preceding* directions; and, involved in the spirals, are three or four nebulous star-like condensations. The general appearance of the nebula, and of the surrounding region of the sky, will best be appreciated on the photo-copy of the negative, now projected on the screen.

The elliptic nebula (supposed to be here recorded for the first time) is elongated in nearly *north* and *south* directions, with dense nebulous condensations in the interior and well-defined margins on the *preceding* and *following* sides, but the north and south ends are undefined, and shade gradually into invisibility. The length of the nebula does not exceed 70 seconds of arc, and the 9·2 magnitude star, D.M. No. 629, zone 75°, is about 30 seconds of arc *south preceding* it.

It will be observed on the photograph that the region of the sky surrounding these nebulae is rather sparingly covered with stars, and that they are all fainter than 8th magnitude.

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*Photograph of the Cluster H VIII. 76 and of a new Nebula in Cygnus.* By Isaac Roberts, D.Sc., F.R.S.

The photograph of the cluster H VIII. 76 R.A.,  $20^{\text{h}} 51^{\text{m}}.5$ , Decl.  $46^{\circ} 53'$  north, and of a new nebula in *Cygnus* was taken with the 20-inch reflector on 1895 September 13, with an exposure of the plate during two hours. The copy now presented is enlarged to the scale of 1 millimetre to 24 seconds of arc.

The cluster is N.G.C. No. 6991, G.C. No. 4615, *h* 2091, and is described by Sir J. Herschel as large, poor, very little compressed.

The photograph shows that there is no cluster, in the ordinary, accepted use of the word, on the plate, but that there are densely crowded areas of stars in this as well as in many other regions of the sky; and I may here remark that Herschel's 8th class of clusters would be better designated as rich fields of stars. This designation, again, could be only relative, for an increase in the magnifying power of the observing instrument or of the photo-camera would separate the stars so that our ideas of a relationship between them would be entirely changed.

The new nebula (supposed to be here recorded for the first time) is in R.A.  $20^{\text{h}} 50^{\text{m}} 56^{\text{s}}$ , Decl.  $46^{\circ} 51' 9''$  north (epoch 1855), and it either involves, or else just touches, the star D.M. No. 3111 zone +  $46^{\circ}$ . It is about  $6\frac{1}{2}$  minutes of arc in length from north to south, and 5 minutes of arc in breadth from *preceding* to *following*, irregular in outline and with many stars, both bright and faint, involved or in alignment with it. The nebulosity has no regular structure and is of a fleecy character, the margins gradually fading into invisibility.

The photograph shows that this nebula is surrounded by stars more numerous than is generally the case in the regions contiguous to nebulae.

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*The Orbit of  $\Sigma$  1379.* By T. Lewis.

Observations of this binary are very scarce, although it has been known since 1827, when it was measured by W. Struve. This summer I had an opportunity of examining it with the 28-inch Greenwich refractor, and have deduced a provisional orbit principally to call attention to it. The position for 1900 is

R.A.  $14^{\text{h}} 41^{\text{m}} 20^{\text{s}}$       N.P.D.  $79^{\circ} 55'$       Mags. 7.7 and 8.5

The residuals are in some cases large but are well within the discordances of the observations. The difficulty of the object since 1850 is sufficient to account for these variations; indeed the

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