

*Photograph of the Clusters 33 and 34  $\eta$  VI. Persei.*  
By Isaac Roberts.

The two well-known clusters in the sword-handle of *Perseus*, when seen on a photograph which has been exposed in a 20-inch reflector for three hours, present an appearance of grandeur that can only be fully realised by aid of the photographic method. The enlargement from the negative taken on January 13, 1890, is now before us, and any written description will convey only a very inadequate idea of it. The stars are densely crowded in the clusters, as well as in the surrounding and intervening spaces, and by looking at the photograph from a distance of about 18 inches from the eye, the festoon-like groupings of the stars are very striking; but at present I only attach to these combinations a fortuitous character, for we well know by experience that the eye readily sees patterns and groupings on any surface that is made up of a large number of small pieces in close contiguity. This general statement is not intended to exclude the possibility, or even probability, that numerous stellar systems will in time be found amongst the various star groups shown on photographs.

The clusters here referred to differ in character from those like the *Pleiades*, 13 *M. Herculis*, or 2 *M. Aquarii*, inasmuch as there is no trace of nebulosity shown in either of them; the component stars show on the negative as clear discs from the circumference to the centres of the two clusters, and this fact, when it is considered in connection with the nebular or the meteoritic hypotheses, suggests a relative progression in the evolution of some of the nebulae and clusters which have already been photographically delineated and presented to the Society. For instance, the nebulae in *Orion* and in the *Pleiades* have not yet assumed a symmetrical form like the nebulae in *Andromeda*, in *Ursa Major*, and in the spiral nebula in *Canum Venaticorum*. These latter would therefore, on this hypothesis, be anterior in time, or have proceeded further in their development towards the formation of stellar systems, than the nebulae in *Orion* or in the *Pleiades*.

The clusters 13 *M. Herculis*, 5 *M. Librae*, and others, have still further than those of the *Andromeda* type developed into stellar systems, for the nebulosity remaining in them is faint and limited within the boundary of the clusters, and so approaches the period of total absorption. Again, we see the clusters in *Perseus*, now introduced, appearing to be quite free from nebulosity, and therefore, by this hypothesis, are anterior in time to any of the other nebulae or clusters which have been referred to. We seem to be thus on the way, by the aid of photography, to an intelligible classification of some of the stages in the evolu-