

ASTRONOMISCHE NACHRICHTEN.

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13.

On the exterior Nebulosities of the Pleiades.

By *E. E. Barnard.*

[With a plate.]

For many years during my comet seeking I have known of a vast and extensive but very diffused nebulosity north of the Pleiades. Other masses of this diffused matter make their presence known by a general dulling of the field when sweeping in the region of the cluster.

As is well known the immediate group of the Pleiades is filled with nebulosity which in general attaches itself to the various stars and is of a wispy and streaky nature. This is well shown on the photographs made by the Henry Brothers, by Roberts, Wilson and others. In these pictures, however, the nebulosity seems limited to a small area included in the cluster itself. The principal and best known of these nebulosities is the one discovered by Tempel in 1859 and which envelopes Merope and extends south-westerly from that star. The other nebulosities have revealed themselves through the aid of photography in the past ten years.

This cluster and its nebulosities have been more thoroughly studied visually and photographically than any other group of stars in the sky. Consequently anything new about it is of the highest interest.

It has been my hopes during the past two or three years to some time be able to secure a photographic impression of these vague nebulosities that I had seen in the telescope. It was evident this would require a long exposure. The mounting of our Willard lens does not permit an exposure to be carried beyond the meridian. To get sufficient time would therefore require more than one night.

This past winter I have been able by carefully inclosing the camera box in thick black cloth and by taking other precautions, to extend the exposure through two nights with success.

Previous to this I gave an exposure on the Pleiades of four hours, which showed all the well known nebulosities, and gave faint suggestions of more distant wisps of nebulae.

December 6, 1893, an exposure was begun which was continued for five hours. The lens was then carefully

covered without disturbing the plate. The next night was cloudy but on December 8 the exposure was continued for five hours and fifteen minutes — making thus a total of 10^h 15^m.

The resulting picture confirmed the first photograph and showed a number of singular curved and streaky nebulosities apparently connected with the Pleiades and extending all about the group.

Some of these streams extend irregularly for several degrees each side of the cluster — especially towards the east.

To give an idea of the affected regions, I have made the inclosed drawing from the photograph which will explain itself. On this I have drawn a circle about the Pleiades inside of which all the nebulosity shown in previous photographs has been confined.

I have not attempted to sketch the nebulosities connected immediately with the stars of the cluster, and shown on the photograph, for these are already well known to every body.

For the more ready location of these outer nebulosities I have, very roughly, put a set of coordinates around the edge of the drawing.

To the north of the Pleiades, from $\alpha = 3^h 20^m$ to 4 hours and beyond, and from $\delta = +30^\circ$ to several degrees further north, is a region singularly devoid of small stars but covered with large masses of very diffuse nebulosity; this part of the sky will attract the attention of any one in sweeping over it with a very low power on an ordinary telescope. The field is dull with feeble nebulosity. This region is partly shown on the northern part of the plate and the nebulosity is evident. This is about and west of the stars ζ and σ Persei.

During the coming winter I hope to be able to further extend the exposure time for the delineation of other and fainter nebulosities, in the region of the Pleiades, that are too vaguely shown on the present plate to make much out of.

Mount Hamilton, 1894 July 25.

E. E. Barnard.

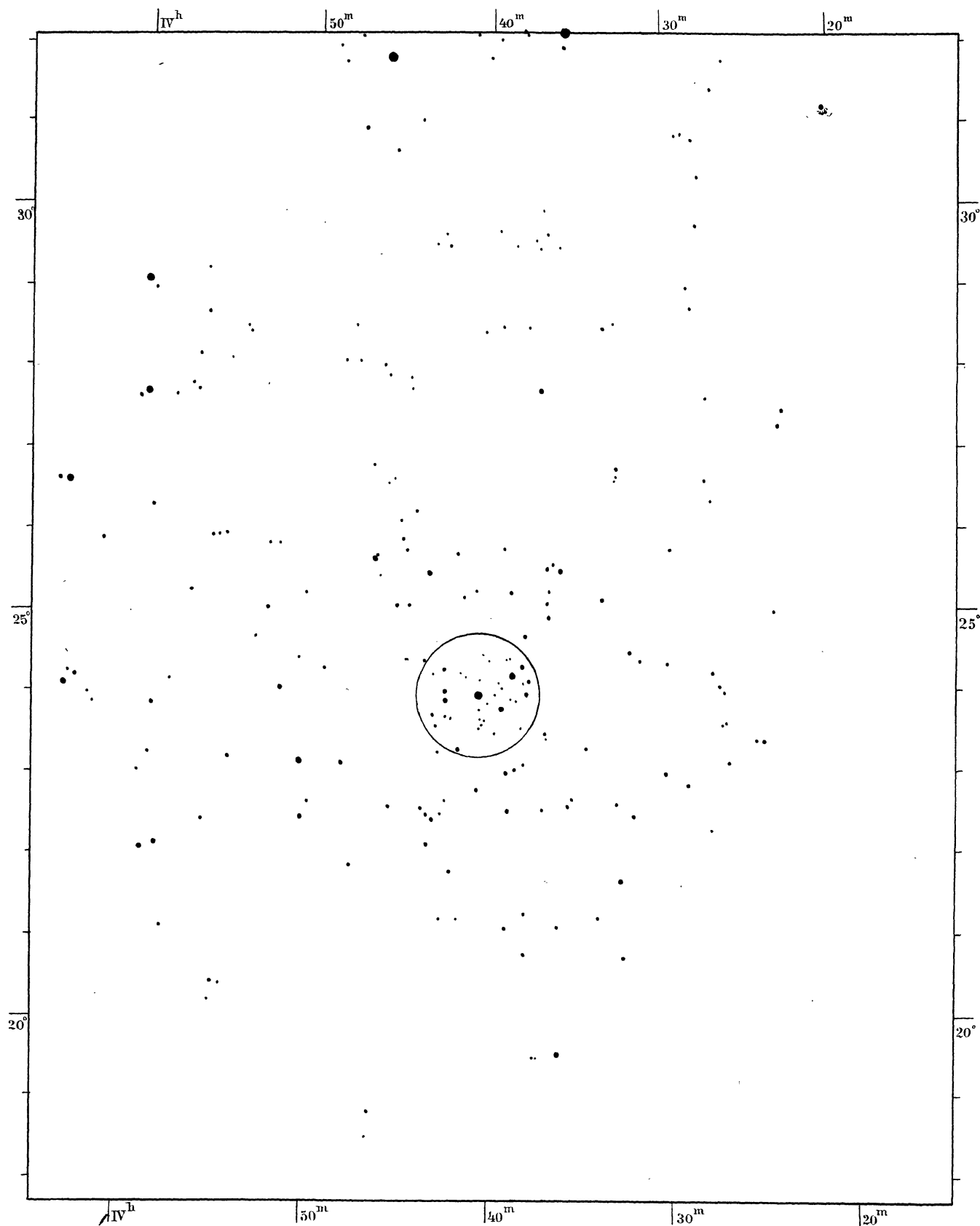


Fig. 1. P. A. Furze, 1901.