refractor of the Dearborn Observatory, and the nuclei measured with reference to each other, and to the 9·3 mag. star. These observations will be found in *Memoirs* of the R.A.S. vol. xliv. pp. 78, 157. It will be noticed that my measures of the nuclei disagree entirely with those of Dr. Copeland (*Urania*, Jan. 1881).

Burnham	P = 88°·5	D = 2″·6	1878·47
Copeland	71·8	8·0	1880·91

I cannot but think there is considerable error from some source in the last distance; for between 1873, when, as stated above, a high power was necessary to show the double character of the nebula, and 1878, when my measures were made, there was no apparent change whatever; and I am quite confident I looked at it at least once in 1880 and found its appearance substantially the same. A re-examination, however, will at once show what the real or approximate distance is.

Whatever the merits or advantages of the spectroscopic plan for the discovery of nebulæ may be generally, certainly no new method is required for this particular object; for any good refractor of four or five inches aperture is quite sufficient to detect it at once with an ordinary eyepiece.

Chicago:
1881, *March* 8.

The Nebula near Merope. By G. W. Hough, Esq., and S. W. Burnham, Esq.

The observations already made in regard to Tempel's Nebula in the *Pleiades*, although very numerous, are nevertheless so discordant that additional facts may be of interest. In Herschel's Catalogue the description is as follows: exceedingly interesting object; bright; very large; irregular figure; variable. From this description it would be inferred that it was a comparatively easy object.

The casual examination of *Merope* and its immediate neighbourhood on a number of nights during 1879 and 1880 with the 18½-inch Clark Refractor, with powers 120 and upwards, failed to show any nebulosity whatever.

The recent very positive statement of Tempel in the *Monthly Notices*, vol. xl. No. 9, in which the Nebula is so sharply delineated, led us to make a thorough examination of *Merope* with the Chicago Refractor, using various powers and apertures, to satisfy ourselves with regard to its existence.

In order that the circumstances affecting its visibility should be the most favourable, only first-class observing nights were chosen for making these examinations.

The following brief notes give the results of our work in this direction.

Nov. 29, 1880. Seeing good. Comet eye-piece, negative. Power 60; object-glass 12 inches, and full aperture.

When *Merope* was placed near the edge or outside the field, a faint glow was seen, south and preceding, in the general direction corresponding to Tempel's drawing, but nothing which would ordinarily be regarded as a nebula.

Dec. 2, 1880. Seeing excellent. The gauze ring of *Saturn* very sharply defined. Positive eye-piece. Power 120.

When *Merope* was placed near the edge of the field a faint glow was seen similar to that observed on Nov. 29th. A narrow strip of tinfoil was then placed across the field to cut off the direct light of *Merope*, when the glow disappeared, and no trace of nebulosity was visible.

Jan. 30, 1881. Seeing good. *Jupiter* and *Saturn* would bear a power of 638. Positive eye-piece. Power 120.

With a clear field, no glow or nebulosity could be seen. An occulting-bar was then used to cut off the light of *Merope*, with the same result.

March 22, 1881. Seeing good. Comet-eye-piece. Powers 60 and upwards. No trace of nebula was visible. Immediately after making this examination the telescope was set for the following faint Nebulæ, all of which proved to be comparatively easy objects: Dreyer and Herschel's, Nos. 5381, 5388, 5399, 5400 5415, 5416, 1661.

The observation on November 29 led us to conclude that possibly the faint glow was due to nebulous matter, but the subsequent observation, in which an occulting-bar was used, proved conclusively that it proceeded from *Merope*.

With higher powers, no trace of nebula was ever seen in the neighbourhood of *Merope*.

So many observers, however, with various kinds of telescopes, have obviously seen something *near* this locality, that the question is one of more than ordinary interest, and the negative testimony of any one instrument should have but little weight, provided the positive evidence is sufficiently concordant. Whether, however, observers have seen Tempel's Nebula or something else will best be ascertained by comparing all observations with Tempel's description and drawing. A Nebula seen in any other part of the *Pleiades* cannot, therefore, be regarded as the object under discussion.

Tempel says: "It is now ascertained beyond question that the Nebula exists. It has been observed with the great Washington Refractor, and again with the Reflector of Lord Rosse."

In how far this statement is warranted may be ascertained from the following facts :—

"Washington Observations," 1874, p. 75.

"Tempel's Nebula in the *Pleiades* has been viewed occasionally."

"Wash. Obs." 1878.

"1875, Oct. 25. Power 158. Observer, Holden.

"*Merope* is a nebulous star, with a dark space on its *preceding north* and *following* sides. To the *south* it is joined by nebulosity to the main body of nebulosity above. This is not uniform in brightness, but cut up into portions by dark channels, several of them *north*, and following *Merope*. The nebulosity extends north [south] of this star some distance, some 6′ or 7′ at least, and perhaps more, as this point was not looked to. With 400, *Merope* is seen nebulous, but the rest is lost."

"Comet-seeker: power [?].

"I have drawn a dotted line on Tempel's map (pub. "R. O. di Milano," No. 5, plate ii.) where I see the boundary. I am sure it is further extended to the south and west than Tempel has it. No nebulosity seen north of *Merope*."

"1875, Oct. 29. Positive; 173.

"*Merope* looks nebulous to a distance of, say, 60″ following; then comes a dark streak, and then a narrow nebulous wisp (pos. 150°±est.) which passes through a star 14 mag., 20^s following *Merope*. This 14 mag. star is the first star following *Merope* in the same declination (approximately).

"I see nothing of Wolf's 2^d nucleus, 7^s following *Merope*."

"Observatory," vol i. p. 370. Reference to Tempel's Nebula in the *Pleiades*. It is not stated, however, what was seen with Lord Rosse's great Reflector.

Monthly Notices, vol. xl. No. 6. Mr. Common's 3-ft. Reflector. Three nebulous patches are shown, all outside of Tempel's boundary, and entirely different objects from Tempel's Nebula.

Monthly Notices, vol. xl. No. 2. Maxwell Hall. 4-inch Refractor; power 100. Drawing very similar to the one given by Tempel.

Schiaparelli, Feb. 25, 1875. "He noted it to extend from *Merope* beyond *Electra*, and as far as *Cœleno*."

Monthly Notices, vol. xl. No. 5. Dr. C. Wolf. 12-inch Refractor.

"Elle se prolonge vers *Electre* et au-delà de *Cœleno*, comme l'a dit Schiaparelli."

Dr. Engelman. Circular patch of light 11′ from *Merope* in the direction of Tempel's Nebula.

A comparison of the observations of these various authorities leaves the position, extent, and boundary of the Nebula very uncertain. It seems clear, however, that the great telescopes do not locate it in the position assigned by Tempel.

The angle of position of the axis of the Nebula with reference to *Merope*, as seen by different observers, appears to be approximately as follows :—

Tempel, Maxwell Hall, Engelman	205°
Wolf and Schiaparelli	315°
Common...	20°, 135°
Holden	...150°, 25°, 205°

In view of such great discrepancies by observers with first-class telescopes, we think it may with great propriety be asked whether these various appearances are due to real matter, or are simply an illusion.

We are strongly inclined to the opinion that the phenomena in question are due to the glow proceeding from *Merope* and neighbouring stars. With a small telescope and low power we should have to contend with the light from numerous stars in different parts of the field. As the size of the telescope is increased, the field will be diminished, and a less number of stars will be included, which might materially modify the phenomena.

In our observations of Nov. 29 and Dec. 2, the glow seemed to have a definite outline, on the north and following sides, such as might be produced by real matter; but so soon as an occulting-bar was introduced to cut off the direct light of *Merope*, the whole phenomenon disappeared : whereas, had it been due to real matter, it should have been more conspicuous when the occulting-bar was used.

Until, therefore, the observations by different observers and telescopes are better reconciled than at present—not to mention the prominent astronomers who have failed to detect any nebula—we think there is just ground to doubt the existence of any real matter in the position assigned for this Nebula.

Dearborn Observatory:
1881, *March* 29.