

Two Probably Variable Nebulae.

By *E. E. Barnard.*

Mr. Denning has called attention to a nebula which he discovered November 7, 1890, and gives the following position 1890.0 $\alpha = 3^h 56^m \delta = +69^\circ 29'$.

I had previously discovered this nebula on August 23, 1889. It was so singularly like a comet that I repeatedly measured it that night in hopes of detecting motion. Four hours observation however failed to show any displacement. I again examined it the next night, and have observed it several times since, and on one occasion independently swept it up. It does not seem to have changed since my first observation.

It is 1' diameter, round, very gradually brighter in the middle with no nucleus. Its appearance is very much like that of a comet of class I (see A. J. 246). It lies a little following the line and nearly midway between a 10th mag. star and an 8.3 mag. star (BD. 8^m4, AOe. 9^m, Mr. Denning gives it as about 7 mag.).

From its brightness it is not possible that it has been so conspicuous for any great length of time, or it would surely have been found by Swift and others. Swift has a nebula in this region NGC. 1485 which he calls e F, p S, R. The fact that Mr. Denning and I independently found it within a little over a year is another proof that it must be brighter than in previous years.

The nebula should be watched as it will probably show signs of variability.

Following are the measures of this nebula made on August 23, 1889, with the micrometer of the 12 inch (neb.—*):

$$\Delta\alpha = -0^m 5^s 20 (15 \text{ obs.}), \Delta\delta = -3' 12'' 0 (6 \text{ obs.})$$

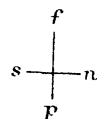
Comp. star: AOe. 4374-75 the place of which was 1889.0 $\alpha = 3^h 56^m 22^s 21, \delta = +69^\circ 33' 50'' 0$.

Hence the place of the nebula is

$$1889.0 \alpha = 3^h 56^m 17^s 01, \delta = +69^\circ 30' 38'' 0$$

I have a sketch of it made on the night of Aug. 23, 1889, which corresponds to its appearance at subsequent observations.

Mt. Hamilton, 1892 March 27.



I would specially recommend careful observations of this nebula because I have had an experience with another new nebula in which I am positive of a light change.

On November 30, 1888, I discovered a small pretty bright nebula in Cetus and was surprised from the brightness of the nebula, to find that it was not in any catalogue.

I carefully measured its position with the micrometer, and examined it the next night for motion, suspecting it to be a comet. No motion being detected it was not observed further. I have a very distinct recollection of the object and from my description I would estimate that it was between the 9th and 10th magnitudes. In its center was a very small stellar nucleus of the 13th mag.

Not having seen the nebula in my subsequent sweeps in that neighborhood, I was led in 1891 to examine its position with the 12 inch. The nebula was found with some difficulty. It was extremely faint, and was only identified by the aid of the comparison star of the previous observation. This was November 22, 1891. I estimated it to be 13^{1/2} magnitude, 1/2' in diameter, with perhaps a faint nucleus. I again examined it on Dec. 24, 1891 and could see a very faint nucleus. The nebula was estimated to be 13 magnitude, round, 1/2' in diameter. In a note it is recorded that from recollection, the nebula at these last observations could not be 1/5 as bright as on Nov. 30, 1888.

Following are the observations of the nebula 1888 Nov. 30 (neb.—*):

$$\Delta\alpha = +1^m 44^s 13 (10 \text{ obs.}), \Delta\delta = -5' 47'' 2 (3 \text{ obs.}).$$

The comparison star was W₁ 0^h 59^m 4 the position of which for 1888.0 was $\alpha = 0^h 36^m 11^s 58, \delta = -8^\circ 42' 19'' 3$, and the position of the nebula

$$1888.0 \alpha = 0^h 37^m 55^s 71, \delta = -8^\circ 48' 6'' 5$$

The observations of Nov. 22, 1891 gave (neb.—*):

$$\Delta\alpha = +1^m 43^s 88 (6 \text{ obs.}), \Delta\delta = -5' 49'' 0 (3 \text{ obs.}).$$

E. E. Barnard.

The Lunar Craters Alpetragius and Thales.

By *E. E. Barnard.*

I have never made a careful study of the Moon's surface, but have casually examined it for a great many years. Within the past two years I have witnessed two phenomena that may possibly be suggestive.

So little is really known that has a positive bearing on evidence for a lunar atmosphere that it seems only just to print any observation, of which the observer is positive, that may be of evidence for or against the presence of vapor on the Moon. I therefore do not hesitate to give the following observations, but withhold any comments because of an unfamiliarity with lunar work. I trust however

that the attention of those interested in such work may be directed to the subject through the following remarks.

1889 Sept. 3. While observing the occultation of Jupiter my attention was attracted by the appearance of a small crater which I have identified on Webb's Map of the Moon (issued with »Celestial objects for common telescopes«) as No. 205, Alpetragius. I was struck by the general haziness of the interior of this crater at sidereal time 18^h 30^m. Following are my notes accompanying a sketch.

»The shadow of the central peak is diffused and pale. The entire inside of the crater seems to be filled with haze