

It is not referred to again until Dembowski examined it in 1865 and found it single and again in 1874. (Dembowski measures Vol. I.227). I tried it in 1874 with the 9.4 inch refractor at Hanover, and could see no certain elongation; and later, in 1879, it was certainly single with the 18½ inch at Chicago. Taking all the results into consideration, it seemed on the whole improbable that this star was really double.

I looked it up recently with the 36 inch refractor of this Observatory, and at once saw that it was a close pair after all; but quite difficult even with the large telescope except under favorable conditions. I have since made the following measures:

1890.879	122°9	0".20	7 ^m .5, 8 ^m .5
882	121.0	0.11	7.0, 8.5
898	121.0	0.15	7.3, 8.0
1890.88	121.6	0.15	7.3, 8.3

A double star with the present distance of this pair would probably not be seen with any of the instruments used heretofore in the observations of $O\Sigma 15$.

The place of this star (1880) is:

$$\text{RA.} = 0^{\text{h}}29^{\text{m}}14^{\text{s}}, \quad \text{Decl.} = +48^{\circ}22'.$$

Lick Observatory 1890 Nov. 30.

S. W. Burnham.

Note on the double star $O\Sigma 487$.

By *S. W. Burnham.*

This is one of the close pairs of the Pulkowa Catalogue, and it has resisted all attempts to measure it from the time of its discovery by $O\Sigma$ in 1842 down to the present year. It was seen at Pulkowa as elongated with more or less certainty on five nights from 1844 to 1858, and the approximate position angles recorded from 28° to 69°. Dembowski could do nothing with it in 1865, and I failed to see any signs of duplicity with my 6 inch refractor in 1874.

Last September I picked this star up independently

Lick Observatory 1890 Nov. 30.

with the 12 inch telescope, and at once suspected that it must be a close pair. Later it was verified, and measured on three nights with the large refractor. The mean result is as follows:

$$1890.68 \quad 208^{\circ}3 \quad 0".20 \quad 6^{\text{m}}.9, 8^{\text{m}}.7.$$

It is not a difficult pair to measure with the 36 inch, as the stars are well separated. It can hardly fail to be a binary, and may be in rapid motion. The place (1880) is:

$$\text{RA.} = 22^{\text{h}}59^{\text{m}}10^{\text{s}}, \quad \text{Decl.} = +80^{\circ}8'.$$

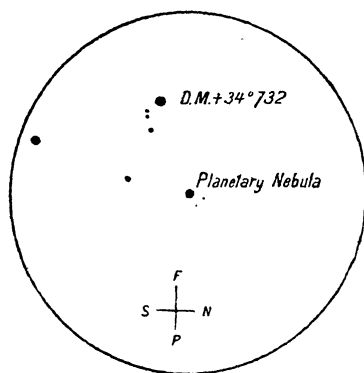
S. W. Burnham.

A New Planetary Nebula.

By *E. E. Barnard.*

On Dec. 5th while examining the region near Zona's comet with the 36 inch telescope, I discovered a small planetary nebula that is not in the catalogues. At sidereal 24^h0^m it followed the comet by 1^m3^s ± and was ¼' south. I estimated it to be about the 10 magnitude. It is perhaps not perfectly circular, uniform in its light.

On Dec. 10, I measured its position with the 12 inch, referred to the 9^m star DM. +34°732.



Plan. Neb. — DM. +34°732:

$$\Delta\alpha = -0^{\text{m}}14^{\text{s}}39 \text{ (16 obs.)} \quad \Delta\delta = +1'42".0 \text{ (3 obs.)}$$

With the 12 inch, it was just distinguishable from a star with a power of 150. One rough placing of the wires gave its diameter = 4".6, I would estimate it a little smaller than that. There are two 13^m.5 stars close p. and n. of it. With the 12 inch, I estimated the nebula equal to a star of the 10^m.5 or 11^m. I give a sketch of the 15' field of the 12 inch, showing the location of the nebula for easy reference. The nearest of the two small stars preceding DM. +34°732 is double, estimated:

$$270^{\circ} \quad 2".5 \pm \quad 11^{\text{m}}.9, 12^{\text{m}}.$$

The approximate place of this object for 1890.0 is:

$$\alpha = 3^{\text{h}}40^{\text{m}}28^{\text{s}}, \quad \delta = +34^{\circ}43'1.$$

Mt. Hamilton 1890 Dec. 11. *E. E. Barnard.*