

The Observer's Challenge Objects

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December 2020: M76 –Planetary Nebula – Perseus

Messier 76 (M76)

Charles Messier's 76th entry in his "not a comet" list was actually discovered by Messier's colleague Pierre Méchain on Sept 5th, 1780. Known as the "Little Dumbbell Nebula", M76 is one of only four planetary nebula in the Messier Catalog.

A lot of amateurs mistakenly credit Charles Messier for naming these types of deep sky objects. Messier in 1764 discovered what would become the first planetary nebula, M27 (the Dumbbell Nebula) in the constellation of Vulpecula, and listed it in his catalogue of nebulous objects for comet hunters to avoid. Messier, with help from fellow French astronomer and comet hunter Pierre Méchain, went on to add three more of these objects to his catalog, (M57, M76, M97) but he never described them as resembling planets.

In 1779, another French astronomer Antoine Darquier, who is today co-credited with Messier for the discovery of M57, "the Ring Nebula", described his observations of it as: "...a very dull but perfectly outlined; it is as large as Jupiter and resembles a fading planet". But Darquier's observation of M57 wasn't widely published as Messier's and with credit for finding M57 going mostly to Messier; Darquier's description of M57 was soon forgotten.

But it wasn't until a few years later and by another astronomer that these types of objects were begun to be described as 'planetary nebula'. With the discovery in the constellation of Aquarius of what is now known as NGC7009 – (the Saturn Nebula) in 1782, William Herschel, (discover of the planet Uranus a year earlier in 1781), first used the term "planet" in his description of these objects: "*These bodies appear to have a disk that is rather like a planet, that is to say, of equal brightness all over, round or somewhat oval, and about as well defined in outline as the disk of the planets,,,"*". While it's possible that Herschel had read Darquier's previous description of M57, it could very well be that Herschel had 'planets' on his mind from his discovery of Uranus, as he always kept an eye out for finding additional solar system members. Herschel went on to use the term "planetary" in his publications for 15 separate objects whose characteristics were a well defined round or oval shape with equal brightness across the disk. An example of which was his description of NGC7662 in Andromeda, Herschel calls it: "*a wonderful bright, round planetary, pretty well defined disk,,,"*"

Herschel even named one of his deep-sky catalog classification categories (Class-IV) after these objects – "Planetary Nebula". But it wasn't until years later upon the persistence of his son John in using the term "planetary" in publications of his new discoveries from his southern sky cataloging trip to South Africa that it really caught on and astronomers began actually calling these objects planetary nebula. John Herschel described these objects as: "*exactly the appearance of planets*", or "*perfectly round, very planetary,,, very like Uranus,,*", and "*just like a small planet*". From the mid 19th century onwards, astronomers and observers now commonly described these objects as 'Planetary'. So the credit for popularizing the term 'planetary nebula' goes to the team of William and John Herschel.

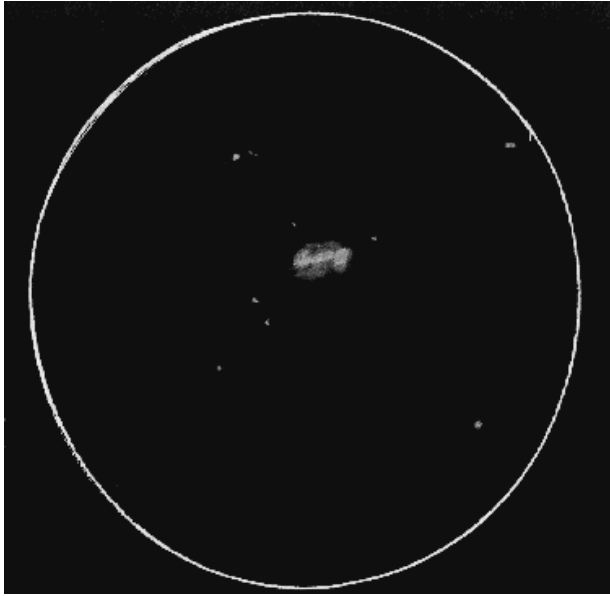
Observation:

M76 is located in the fall constellation of Perseus - 'The Hero', and is known as the 'Little Dumbbell Nebula'. It is about 2500 light years distant, and about 6000 years old, and about 1.5 light-years in size. Before it was determined that M76 was a planetary nebula (in 1918), it was once considered to be two separate emission nebula and given the NGC numbers - 650 & 651.

Visually, the 'bar' shaped nebula is not difficult to find, and somewhat resembles its larger namesake (M27) in medium size telescopes. A UHC filter will help enhance the extensions on either end of the bar.

Visual Sketch:

01/05/1987 from suburban backyard in Louisville, KY. Using a 13.1" f4.5 Dob Reflector (Coulter blue-tube) 12.5mm eyepiece (91x). Waxing 5 day old crescent moon above the southwest horizon, along with a neighbor's backyard light hindering the observation.



Video-screencapture:

10/08/2010 from rural location near Mansfield, OH at the Hidden-Hollow star party, using a 8" Celestron SCT optical tube @ f6.3 on a CG-5 mount, using a StellaCam-3 analog video-camera @ 45 seconds, unguided single exposure.



Image:

09/24/2019 from Cherry Springs State Park at the Black Forest Star Party, using a 8" Celestron SCT optical tube @ f6.3 on a CGEM mount, using a ASI294MC color camera and IR filter @ 30-second guided exposure livestacked for 35 minutes

