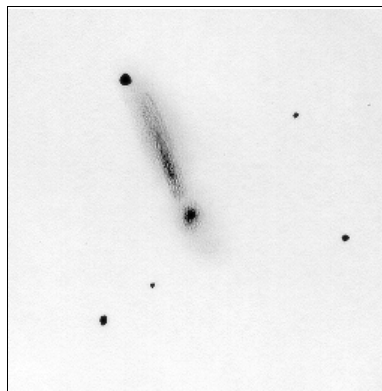


## In Quest of „Deep-Sky Comets“ by Wolfgang Steinicke

When Messier searched for comets around 1780, he found several small diffuse objects with his telescopes. Some were first thought to be comets, like the nebula in Taurus, which John Bevis held for Halley's comet. But they show neither motion nor a developing tail. To avoid future misleadings, he compiled his famous catalogue. We now know, that all 110 Messier objects belong to the „Deep-Sky“. The object in Taurus is Messier 1, the supernova remnant called „crab nebula“.

This article deals with a „reverse case“: Deep-Sky objects which are „cometary“, e.g. appear just like ordinary comets with coma and tail. The prototype of a galactic „cometary nebula“ is NGC 2261 in Monoceros, first discussed by Edwin Hubble in 1916. The object, also called „Hubble's variable nebula“ is an early stage of a newborn star. The star R Mon ejects and illuminates embrional matter in form of a jet. Another example of this class is Parsamyan 21 in Aquila.

Both objects are members of the Milky Way. Are there any „extragalactic comets“? Yes, but we have to go far out to much larger systems. I have searched for „cometary galaxies“, finding out that this is a very rare sample (not to be confused with „head-tail radio galaxies“). The most prominent of a dozend cases might be the galaxy NGC 4861 in Canes Venatici, discovered by William Herschel in 1785. Another historic object is involved: IC 3961, found by Max Wolf. NGC 4861 was identified as the head of the „comet“ and IC 3961 as its tail. But due to the work of the NGC/IC Project, both entries are the same object. The head, actually an extremely luminous HII region of the galaxy, was first seen 1833 by John Herschel and confirmed 1880 by Lord Rosse IV. My own visual observation of the 12.3mag galaxy and its knot resembles very much the historic description (Fig. 1).



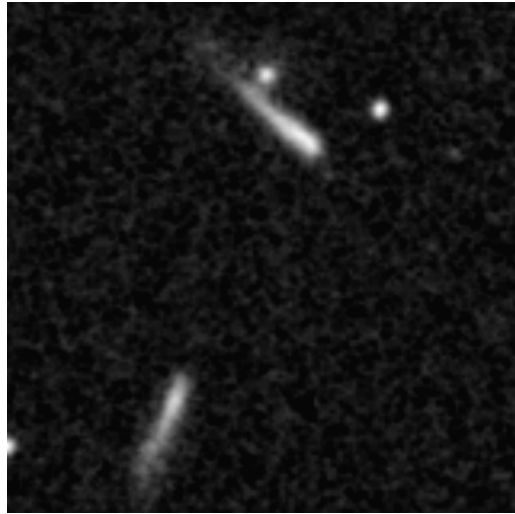
*Fig. 1* - Sketch of NGC 4861 made by the author with a 20" Dobson.

Much less prominent might be another example: Arp 125 in Hercules (Fig. 2). It looks more like a „curved comet“ (West 1976, Donati 1858) and is much fainter ( $V=15.1\text{mag}$ ), but was clearly visible in my 20" Dobson as small knot with jet NW. For southern observers NGC 7204 in Pisces Austrinus is also a nice example ( $V=13.7\text{mag}$ ).



*Fig. 2* - Arp 125, a peculiar cometary galaxy in Hercules.

It is extremely rare when two comets meet. This is also true for cometary galaxies. There is one very faint example, which maybe a target for CCD cameras: UGC 5938 + UGC 5942 in Draco (Fig. 3), first catalogued by Fritz Zwicky as VII Zw 349. He describes the double as „two blue post-eruptive, jet-like galaxies (separation 95" N-S) with compact knots“; photographic magnitudes 16.5 and 16.0.



*Fig. 3 - UGC 5938/42, the meeting of two cometary galaxies.*

More objects can be found on my homepage ([www.klima-luft.de/steinicke](http://www.klima-luft.de/steinicke)). In most cases, the tail might be caused by interaction with another galaxy. The head often is a place of rapid star formation. I will not close my short trip to “Deep-Sky comets” until mentioning the curious case of IC 2120. This object was discovered by Bigourdan and turned out to be - thanks to the NGC/IC Project again - comet 113/P Spitaler 1890!