

## Deep Sky Treasures

### Observer's Notebook

by John Davis

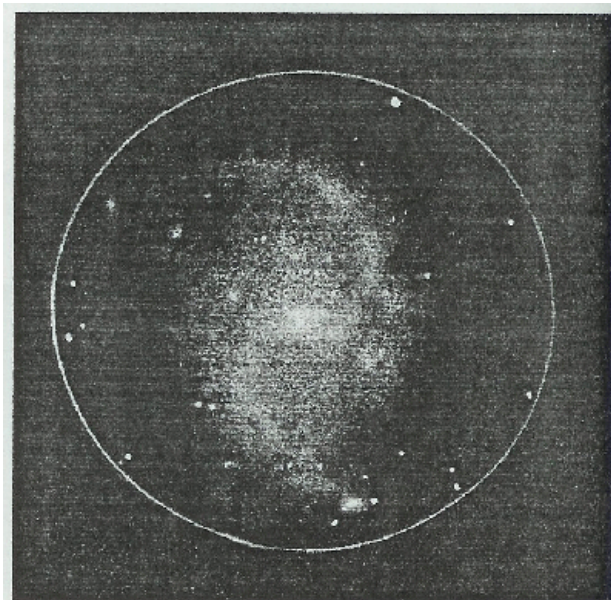
#### A Challenging Spiral

One of the true treasures of our crisp clear autumn skies is tucked away below Andromeda in the small constellation Triangulum. This gem is the nearly face-on spiral M33, the "Pinwheel" Galaxy, featured in our column back in Vol. 8 "View from Arunah" (Winter 1995) but which deserves another look. Under perfect sky conditions and with extremely keen eyesight M33 can even be glimpsed with the naked eye, glowing at magnitude 5.7. Yet this deceptively difficult object presents a challenge to many new observers because of two factors: its relatively large apparent size and its low surface brightness, which combine to make seeing it sometimes an exercise in frustration, especially with a telescope other than one using low power or a "rich field" scope, as the extent of M33 with its faint extensions spans a full degree of sky, the width of two full moons!

The key to finding and enjoying this beautiful galaxy however is to pinpoint its exact location. One handy way to spot it is to scan with your binoculars along a line from Alpha Triangulum (at the narrow SW tip of the triangle) northwesterly 1/3 of the distance to 2<sup>nd</sup> magnitude Beta Andromedae, then slide SW just under 1 1/2 degrees to pick up the faint round glow of the galaxy framed inside a flattened diamond of four 8<sup>th</sup>+ magnitude stars.

Discovered by Charles Messier in August 1764, M33 is the smallest of the three giant spiral galaxies in our local group and under the gravitational influence of the largest, the nearby great Andromeda spiral galaxy, M31, 15 degrees to the NW. According to some recent studies, both have now been estimated to be at a distance of just over 2.6 million light years. A loosely wound spiral with prominent arms and smaller nucleus of the Hubble classification Sc, M33 is only of moderate size containing perhaps 100 billion stars and spans 55,000 light years of space, compared with about 100,000 ly for our Milky Way and 150,000 ly for M31.

Once you spot M33 you may at first be unimpressed, as what first greets your eye is a rather nondescript hazy oval glow. But in a dark transparent sky M33 is a classic case of an object which "grows on you". In scopes of 8 to 10 inches and up, spiral arms in the form of a backward "s" become increasingly evident, and in scopes of 12 to 18 inches and larger the whole galaxy becomes progressively mottled, as clumpy bright knots of star clouds and nebulosity begin to appear, evidence of a large population of O and B supergiants in numerous clusters among the spiral arms. Some of these bright spots have NGC designations and can be spotted in moderate aperture scopes. By far the brightest and most obvious of these is the giant H II region and cluster, NGC 604, over 1000 ly across and examined recently in glorious detail by the Hubble Space Telescope. It is 12 arc minutes NE of the nucleus right next to a 10.5 magnitude star, and is visible even in 2 inch scopes and good binoculars. Be sure to check out NGC 604 as you enjoy the intricate subtle beauties of M33 and the numerous other treasures of autumn, especially from clear dark skies such as you'll find at Arunah Hill.



M33 "The Pinwheel Galaxy" in Triangulum. Bright patch at bottom is NGC 604. Sketch is from eyepiece impression by John Davis using 18" refractor at Arunah Hill.