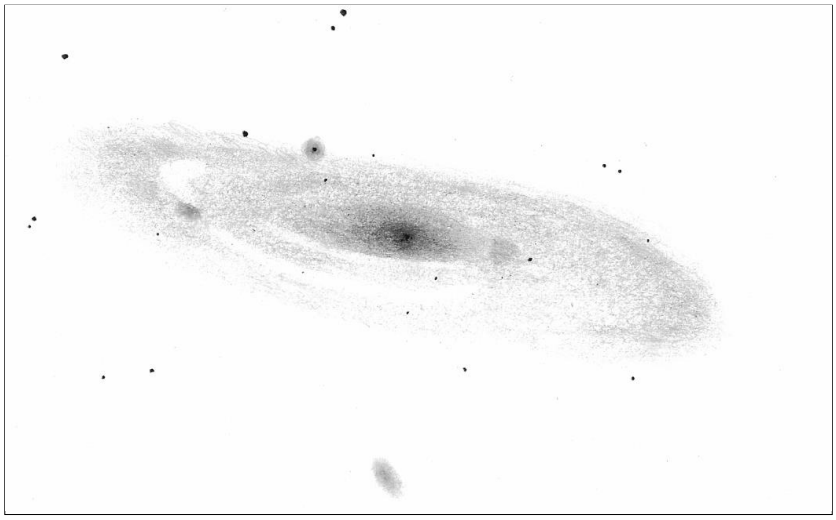
The Night Sky Naturalist, by Bob Vickers

The Great Andromeda Galaxy

While autumn brings colorful foliage and blue skies to our days, it also brings many crisp and clear starry nights. I try to utilize the exceptional transparency of these evenings to take a closer look at some familiar deep sky objects. One of my favorites is the *Great Andromeda Galaxy*, also known as M31 or NGC 224. This showpiece galaxy is interesting on several levels.

First, it can be seen easily without a telescope. Just follow the line from Beta through Mu Andromedae to find its faint, hazy form. Even with the unaided eye it appears elongated along a northeast to southwest axis. This elongation attests to the fact that it is a spiral galaxy tilted only thirteen degrees from edge-on to our line of sight. At a distance of about 2.3 million light years, the Andromeda Galaxy is one of the most distant objects visible to the naked eye. But we only see the bright inner part of the galaxy. Photographs reveal its actual size in the sky to be between three and four degrees or more than six times that of the full moon!

Even a small pair of binoculars will confirm the elongated shape of M31 and show its large, bright core. In addition, binoculars will also show M32 (NGC 221), a small roundish satellite galaxy. In my pair of 7x35 birding binoculars this elliptical companion galaxy appears with averted vision just to the south of the larger galaxy's core. In a telescope it has a bright stellar nucleus surrounded by a much dimmer halo.



Through my 12.5" Dobsonian, M31 takes on its characteristic "street lamp in the fog" look, showing a very elongated shape with a huge, bright, round core and a bright stellar nucleus. The entire surrounding halo, especially to the northeast and southwest, is a dim haze and has a patchy, mottled appearance. After your eyes are fully dark adapted, you can get some idea as to the extent of the galaxy by sweeping back and forth across its width and length. Curiously, the northeast tip curves slightly to the north and the southwest tip curves slightly to the south. One readily apparent feature is the sharper northwestern edge of the galaxy. I had seen this many times before but recently I made a closer examination and saw that this is just the

innermost of two dust lanes beginning well north of the core and extending in a gentle sweeping arc to the southwest. To me, they look like someone has exhaled on a dark pane of glass and made two long, parallel marks with their fingers. Near the southwestern end of the outer dust lane is a slightly brighter, irregularly shaped patch of light. Actually a part of M31, this star cloud has its own NGC number of 206. A darker void, a little larger than the star cloud, is just visible adjacent to its eastern side. A Skyglow filter may help bring out some of the details here by providing more contrast.

An additional nearby treat is NGC 205 (M110), another elliptical companion galaxy to M31. It is larger than M32 but it is not as apparent because it is less concentrated and has a lower surface brightness. It is elongated north-northwest to south-southeast and can be made out just to the northwest of M31. At low power, all three galaxies can be viewed in one field and make for an impressive sight!

Even objects that may already be familiar to us will often bear closer inspection. New details that we haven't seen before (or thought we couldn't see) will sometimes emerge if seeing conditions are right. A good reference, such as *The Night Sky Observer's Guide* by Kepple and Sanner, or *Burnham's Celestial Handbook* by Robert Burnham, Jr., can suggest some more subtle features to try for.