V September!

We don't have to wait so late anymore for a dark sky. Worthwhile watching are M16, Eagle Nebula featured in my July issue, and M11, Wild Duck. I see an eagle in M16, but no flock of wild ducks in M11; must be me.

I need simple images! Two asterisms fill that requirement; both are linear groupings of a few stars. Try to find the little 'chain' of 7 dim stars, only a few degrees long, just west of M11 in the top of that skinny diamond-like asterism in Scutum. The other is much longer; someone called it "Skipping with Stars" after skipping flat pebbles in a pond. The first skip is the southern star in Ophiuchus, eta, followed by zeta, epsilon and delta (epsilon is a small skippy and a very dim star). Then a good skip to Serpens with hops to epsilon, alpha and delta. Finally two more skips in Bootes, epsilon and rho. A fairly straight line of about 50 degrees, not a bad beginner's 'skip'. Distinguishable only because it's linear, the stars are fairly dim. Anyhow it shows my limited imagination to see lines, triangles and 'skinny diamonds' instead of mythical figures imagined by astronomers long ago. Your *Pocket Sky Atlas* makes finding them easy.

In my April 28 issue I showed the super nova in galaxy NGC5584, 75 million l-y away. That SN was discovered on 3/1/07 reached maximum brightness on 3/19 and then fizzled. On July 21 we could just see a very dim star. That was the last observation, I'm afraid. I assembled the images in our new Gallery of astro-photos.

Earlier I mentioned my plans for the Gallery. It is "up" now. Take a look at www.wyalusing.org and click on Star Gazing, pick Observatory and you see Wyalusing Huser Astronomical Gallery (WHAG). Click it and you see 40 pictures in thumbnails. Click on them and you get large images you can print.

Last time I listed some astronomical distances; now some examples to make sure you 'get the picture'. I'll be telling more about supernovae and " dark mass" as several e-mails asked for it. For that you need first a correct picture of our Universe.

Sun has a diameter of roughly 1 million miles; Earth orbits around the Sun 100 million miles away. Pluto, the farthest planet, is 40 times as far. The nearest star is 5 l-y away or 5 x 6 trillion miles (1 l-y =10*16 m). Imagine the Sun being a 3 mm (0.12") bicycle ball bearing. Earth, a pinpoint, is one foot away and the nearest star in our galaxy would then be 100 km away (60ml); the tiny sphere (our Sun) in Prairie du Chien and our "neighbor star" is in La Crosse!

Galaxies are relatively closer together. Imagine Milky Way as a bicycle wheel (20") in your home, and then neighbor galaxy Andromeda would be a 2 ft wheel nearby (10 m), in same building. Galaxy groups like our Local Group have galaxy-densities of this order; Local Group is part of Virgo Group.

Kepler found (~1610!) the relationship between a planet's distance from the Sun and orbital period (its "year"). Remember Kepler's three Laws? 1. ellipses; 2. equal areas; 3. 'ratio of squares of the orbital periods equals ratio of cubes of the distance to Sun'.

In High School the example of Jupiter was given: Earth is 1 AU from Sun and has a 1 year orbital period, while Jupiter is 5.2 AU from Sun and its year equals 11.9 earth-years. Indeed 5.2 cubed (=141) equals 11.9 squared (=142). And if you had forgotten, don't feel bad, I had to look it up too.

Now we are ready for "dark mass", but as on TV, I say: "That'll be next time".

Clear Skies! GW