The Astronomical League

A Federation of Astronomical Societies

Astro Note D1 – **Binocular Buying Basics for Beginners**

Introduction – An economical and inexpensive tool to help you get involved in astronomical observing is a pair of binoculars. There are hundreds of objects in the universe that are visible with a good pair of binoculars. In fact, there are some objects that need the low power and wide field of a good pair of binoculars. The ideal pair for you is dependent on your intended uses for the binoculars. These rules will help you begin your quest.

Rule #1: Buy quality optics – the best optics you can afford. A good pair of binoculars will give you a lifetime of enjoyment. Don't skimp. Then take very good care of them.

Rule #2: Porro Prisms or Roof Prisms? Binoculars with Porro Prisms have the traditional zig-zag shape. Those with Roof Prisms have straight barrels. Porro prisms give better light transmission than most roof prisms. If you buy very good Roof Prism binoculars this is not a problem. (See rule about coatings.) Roof Prism binoculars tend to be more compact.

Rule #3: Coatings? Yes! Coatings help improve the transmission of light through the binoculars. There are binoculars with uncoated optics, and you really do not want these. Some have coated optics, and this is better. You may even see multi-coated optics which is better still. What you really want is fully multi-coated optics. This assures you of the best possible light transmission.

Rule #4: What size to get. Bigger is not always better. If you only use them for astronomy, you can go larger, but if you use them for general bird watching, 10x50 is about the practical limit. Birds are not prone to staying in one place (unlike astronomical objects). The bigger they are the heavier they are too.

Rule #5: Size part 2. The first number is the magnification. The second number is the size of the objective lenses. If you divide the size of the objective by the magnification you get the exit pupil diameter. You want this to be close to the actual size of your pupil when you are using the binoculars. If it is too large, then you have to move your eyes around to see the entire field of view. If it is too small, then you get a tunnel-vision effect. In daylight pupils constrict. So, when you are birding, your pupils may be 2 mm in diameter. In the dark pupils dilate. For the young this may be as much as 7 mm. As

you get older they dilate less. About 5 mm seems to be the right exit pupil size for general use for most people. This means 7x35, 10x50, or 15x75 are good ones.

Rule #6: Extras. Shock resistant, waterproof, and gas filled are all useful additions. Don’t forget a comfortable strap, a carrying case, lens caps, warranties, etc.