The Shoreline Observer

Newsletter for the
Shoreline Amateur Astronomical Association

President- Mark Logsdon **Vice President**- Gary Stroven **Secretary/Treasurer**- Phil Sherman

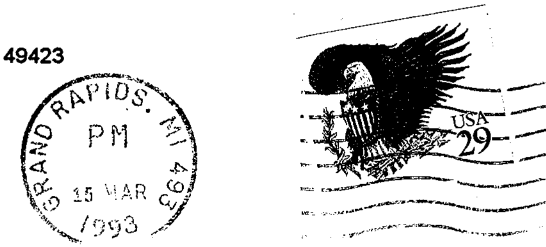
Robert Wade, Editor March 1993

March Meeting

The March meeting of the Shoreline Amateur Astronomical Association will be held on Thursday March 18, beginning promptly at 7:00 PM in the West Ottawa Middle School Planetarium in Holland, Michigan.

- Refreshments, courtesy of Pete Burkey.
- Messier Marathon planning (or wishful thinking). Messier finder charts will be provided.
- Astronomy Day Planning

3882 62nd Street
Holland, Michigan 49423



Board Meeting

Mark called the meeting to order at 7:00 P.M. on March 4, 1993. Phil, Gary, Larry, Arlin, and Pete were also present.

Treasure's Report: $ 308.43

Mark shared a letter from Bill DeVette. Bill has a couple of eclipse tapes that he offers for our viewing at an upcoming meeting. He also updates work on a 15" scope and 10" binoculars.

Mark also shared a letter from the Brockmeier family thanking the SAAA for remembering Dr. Brockmeier while her was in hospice at Grand Rapids. Arlin, Pete, and Mark attended his memorial service at Hope College on February 19.

Mark then passed around a letter confirming our May 1 display at Westshore Mall. We will share that date with the Tulip City Air Force radio control airplane club, who also have a display scheduled. Arlin and Pete will arrange the astronomical poster contest in cooperation with Walden Books and pursue contacting area elementary and middle schools. Mark will contact Sears about our use of a TV/VCR on Astronomy Day to show videos. Planning for Astronomy day will be discussed at our next two regular meetings

Messier Marathon: Two weekends are available to hold it this month, and we will go the first available night the weather permits. Friday March 19 and Saturday march 20 at Mark Logsdon's location on James Street n Park Township. Alternately, on Friday

March 26 or Saturday March 27 at Bob Wade's home in Laketown Township. Please call ahead to verify your attendance.

Meeting adjourned at 8:30 P.M

Respectfully submitted by Mark Logsdon

Astronomical Terms

[Ed. note: obtained from StarGate, the Astronomical League's BBS]

Baffle your boss, dazzle your date, fluster your friends! This is the first installment of a three month short course in Astronomical Terms. After completing this course you will have a true encyclopedic knowledge of the heavens. Test yourself, test your friends, make up your own answers! There are no wrong answers! (However we will indicate those commonly accepted by the scientific community.)

1. Astronomical Unit:
(a) Branch of the armed services that includes astronauts. (b) Mean Sun-Earth distance, 92,955,630 miles. (c) 6.02E23 atoms/mole.

2. Baade's Window: (a) Crowded section in the Milky Way with an unobscured view towards the bulge in our Galaxy. (b) Clear plate glass covering for reflector telescopes. (c) Brief period of exceptional seeing after a strong gust of wind.

3. Baily's Beads: (a) Small stones of volcanic origin thrown at the sun by the Ohlone Indians during total eclipses. (b) Grouping of eight stars in a line in the southern constellation Rosarium. (c) Row of lucid points, like a string of bright beads, seen around the moon's limb during a solar eclipse.

4. Bolides: (a) Telescope mounting system which uses a bowling ball as a universal joint. (b) Minor meteor shower. (c) Major fireball (meteor) which produces a sonic boom.

5. Butterfly Diagram: (a) Plot of sunspot latitudes versus date of observation. (b) Diffraction pattern generated at the eyepiece when a moth lands on your objective. (c) Graph of background sky brightness at Palomar Observatory.

6. Catadioptric: (a) Markings on the walls of the catacombs with astronomical themes, approximately 220 BC. (b) Image aberration characteristic of Cassegrain Systems. (c) Optical system containing both reflective and refractive optics.

7. Coronium: (a) Vacuum deposited anti-reflection coating for optics. (b) Hypothetical element once thought to exist in the Solar Corona. (c) Highly ionized form of chromium.

8. Cosmogony: (a) Study of how the universe began. (b) Study of how the universe currently exists. (c) Study of how the universe will end. (d) One of the above.

9. Cosmic year: (a) One cycle of the oscillating universe theory. (b) Period of time for the average astronomical Ph.D. candidate to finish their thesis. (c) One complete revolution of the sun about the center of the Galaxy, about 225 million years.

10. Cytherean: (a) Plant at our local observing site which causes severe allergic reactions. (b) Adjective for 'Venus' (often preferred to "Venusian"). (c) Ancient religious sun worshipping cult on the Greek island of Cythus.

Answers: 1.(b) 2.(a) 3.(c) 4.(c) 5.(a) 6.(c) 7.(b) 8.(a) or (d) 9.(c) 10.(b)

Buying Your First Telescope -- Part 1

A Supplement to Astronomy magazine
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A telescope buyer's top 30 questions

Buying your first telescope can seem like a complicated affair. There are many models to choose from and many technical terms to contend with. To help you make the right choice, here are answers to 30 of the most-asked questions we get from prospective telescope buyers. We trust you'll find answers to your questions among them. If not, please call us at *Astronomy* magazine [(414) 796-8776 Monday to Friday, 8:30 a.m. to 5:00 p.m. Central Time], or see your local telescope dealer.

1. *How much does the telescope magnify?* Beware of any telescope advertised as "500x" or "high-power." Some manufacturers make it sound as if the more magnification a telescope offers, the better it is. This is not true. Contrary to the claims of department-store catalogs, magnification is not important. Any telescope can be made to magnify any amount. However, the highest power that will still give you a clear view is about 50x per inch of aperture, making the upper limit for a 3-inch telescope 150x, and for a 4-inch telescope 200x. Beyond this limit, the image will be faint, fuzzy, and disappointing.

2. *How, then, do I select the best telescope?* The key characteristic of a telescope is its aperture - the diame-

ter of the main lens or mirror. The larger the aperture, the more light the telescope gathers and focuses into the image. This in turn makes for a brighter, and usually clearer, image. Brighter images make it easier to see faint objects like nebulae and galaxies.

3. *Which are better - refractors or reflectors?* A refractor uses a lens mounted at the front of the telescope to gather and focus light. A reflector (sometimes called a Newtonian) uses a concave or bowl-shaped mirror mounted at the back of the telescope. Both work well; each has its advantages. Reflectors generally offer more aperture for the money. (A 4-inch reflector costs $400 to $500; 4-inch refractors start at $1,000 or more.) However, refractors usually provide slightly sharper images than reflectors of similar aperture. Amateur astronomers who like to view fine details on planets often prefer refractors; those who like to look at faint deep-sky objects use reflectors. For most first-time buyers on a budget, either an 80mm or 90mm refractor or a 4.5-inch reflector is a good choice. Both cost $400 to $600 and have comparable performance.

4. *What are Schmidt-Cassegrain telescopes?* A third type of telescope system, called a catadioptric, uses a combination of mirrors and a refractive corrector lens at the front. The most popular of these hybrid models is the 8-inch Schmidt-Cassegrain (prices start at $1,200). It folds a long focal length into a compact tube, making this type of telescope very portable and convenient to use for its aperture. It is also a good general purpose telescope suitable for observing all classes of celestial targets.

The two main manufacturers of this type of telescope are Celestron International and Meade Instruments Corporation. These two companies are very competitive and offer a similar range of Schmidt-Cassegrains, from basic no-frills units to feature-laden computer--controlled models. Which company makes better telescopes? Over the years we have never found a consistent winner between the two, either in optical or mechanical quality.

5. *What are apochromatic refractors?* One of the principal problems with conventional refractors over 80mm aperture is spurious color around bright objects caused by the inability of the lens to bring all colors to the same point of focus. To greatly reduce this "chromatic aberration," manufacturers have introduced refractors that use 3-element lens systems or special fluorite or "ED" lenses. Called apochromatic, these high-end refractors are among the finest optical systems you can buy and have become popular with telescope aficionados. Models are available from Astro-Physics, Celestron, Meade, Takahashi, and TeleVue. However, a 4-inch "apo" refractor can cost $2,500 to $5,000, more than what many people wish to spend on a first telescope.

6. *How much more will I see with a bigger telescope?* Bigger telescopes can show fainter objects and resolve finer details in bright objects. For example, a 2.4-inch (60mm) refractor will easily show the cloud belts of Jupiter, a 4-inch will show structure within the cloud belts, and an 8-inch will resolve even smaller details. A 4-inch will show globular star clusters as fuzzy-edged spheres of light, a 6-inch will resolve many globular into myriad faint stars, and a 12-inch will provide views of these clusters that surpass any photograph. While a 4-inch will reveal a spiral galaxy as a round glow, an 8-inch will begin to reveal the galaxy's spiral arms.

7. *Will I be happy with a smaller scope?* The fact that bigger telescopes usually show more details and fainter objects leads many people to believe small scopes aren't worth buying. But even an 80mm refractor can show you enough of the universe to keep you entertained for years. For many people it's all the telescope they ever need. We warn people against buying a telescope that is too large - yes, there is such a thing. A big telescope, though exciting at first, can quickly become a burden to carry out to the yard or car and to set up. The best telescope is not the biggest, or even the one with the best optics, but the one that you will use most often. Portability and convenience are factors we urge you to consider when selecting a telescope that you'll have fun using.

8. *I live in the city (country) where the skies are terrible (great). What type of telescope is best for me?* A large-aperture telescope can be useful at any site, but faint deep-sky objects (the kind big scopes are well-suited for) won't show up well under urban skies, no matter what size the scope. City observers often spend more time looking at the Moon and planets, for which a 3- to 8-inch telescope is sufficient. Telescopes in that size range are also very portable, important for city observers who need to transport their scopes to better skies. For most buyers, we feel that a 5-inch refractor, a 6-inch equatorial reflector, an 8-inch Schmidt-Cassegrain, or a 10-inch Dobsonian reflector (see question 16) are the largest telescopes of their types that are conveniently portable. Only if you live under dark skies, or really don't mind lugging a big, heavy scope around, should you consider anything larger for a first telescope.

9. *What does focal length mean? and f/ratio?* The focal length of a telescope is the length of the light path from the main lens or mirror to the eyepiece. In most refractors or reflectors, the focal length is roughly the length of the tube. In telescopes such as Schmidt--Cassegrains in which the light path is bounced back and forth inside the tube several times, the length of the tube is much shorter than the focal length. Focal lengths of telescopes, as with camera lenses, are usually measured in millimeters. The f/ratio of a telescope is the focal length divided by the aperture.

For example, a 100mm-aperture telescope with a 900mm focal length is an f/9 telescope. A 200mm telescope (an 8-inch) with a focal length of 1,800mm is also an f/9.

10. *What focal length is best?* The focal length of the telescope is not a critical specification. Shorter focal lengths (400 to 700mm) will give lower powers and wider fields of view with any given eyepiece than will telescopes with moderate (800 to 1,200mm) or long focal lengths (1,300 to 3,000mm). For this reason, short focal lengths are often preferred for low-power viewing of deep-sky targets and Milky Way star fields. On the other hand, a long-focal-length scope will give a higher power with any given eyepiece. Since the planets require higher powers (100x to 200x), planetary fans often prefer long-focal-length scopes. But with the use of the appropriate eyepieces, most telescopes can be used at both low and high powers.

11. *Is a faster telescope better?* Sometimes manufacturers give the impression that a "faster" telescope (one with an f/ratio of f/4 to f/6) is better than a "slow" telescope (f/7 to f/16). After all, in many situations faster is better. But in this case it isn't. The term "faster" comes from photography where an f/4 lens will record an image with a faster exposure time than an f/16 lens. And for those intending to take long--exposure photos through a telescope, faster scopes can be better. But when looking through a telescope, a faster telescope is not any brighter than a slower scope. For example, as long as both are operating at the same power, the image in an 8-inch f/6 telescope will appear as bright as the image in an 8-inch f/10 scope. The difference is that with the same eyepiece the f/6 telescope will give a lower power and a wider field of view than will the f/10, making faster scopes preferred for deep-sky observing where wide fields are desirable.

12. *What are the eyepieces for?* Eyepieces allow you to change magnification. To determine the magnification an eyepiece gives, divide the focal length of the telescope by the focal length of the eyepiece. For example a 25mm focal length eyepiece used on a 2,000mm focal length scope (such as an 8-inch f/10 scope) will give 2000/25 = 80x. The same eyepiece used on a 1,600mm scope (such as an 8-inch f/6) will give 64x.

13. *What is the small finderscope for?* Finderscopes are essential accessories. They provide a low power (5x to 8x) and a wide field (3* to 5*) and allow you to aim the telescope easily and center it on bright planets and stars. Without a finderscope locating even the Moon can be difficult.

14. *Why are images in telescopes upside-down?* All astronomical telescopes present images that are either upside-down or flipped left-to-right as in a mirror. To flip the image right-side up would require extra lenses in the light path that would dim the view of already faint astronomical objects or add imperfections like flares and ghost images.

More on these topics next month...

SAAA 1993 Mem' ship List

Al Baker
Peter Burkey
Rodger Dalman
William DeVette
Steve DeYoung
Mark Logsdon
Larry Lugten
Sandy Plakke
Phil Sherman
Fran Smith
Gary Stroven
Arlin Ten Kley
Robert Wade
Larry Wildschut