SKYWATCH

'Serving Mobile's Amateur Astronomy Community'
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ANOTHER 'GREAT' COMET?...

Kopff Here, Hale-Bopp Coming

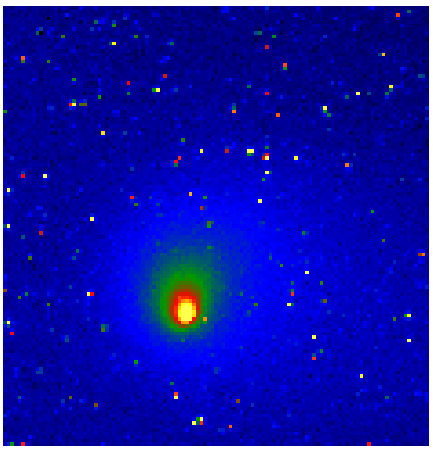
It never rains but it pours. That seems to be true of both our Summer weather and COMETS lately. It's only been a short time since we were witness to the exciting apparition of Comet Hyakutake. And now we've got TWO MORE comets lighting-up our skies: Comet Kopff, a periodic comet which is putting on a respectable show, and the much-heralded Comet Hale-Bopp, which continues its lazy voyage across the Summer constellations.

Comet Kopff, a regular visitor to the inner Solar System whose period is 6.4 years, was supposed to be unusually favorably positioned for observers on this orbit. Unfortunately, this does not appear to have happened, since Kopff has been over .5 magnitude fainter than some wishful thinkers had hoped. Nevertheless, Kopff was a very pretty binocular comet which provided a nice counterpoint to nearby Hale-Bopp as it drifted across Sagittarius in early August.

Meanwhile, the (in)famous Hale-Bopp still has all of the signs of becoming a 'spectacular' comet next year. While this beast is still out beyond the orbit of Mars, it has now become a naked eye object (for observers with acute eyesight located in dark areas, anyway)! How will this visitor compare with the late, lamented Hyakutake? Well, making predictions about comets is a *very* risky business, but facts seem to indicate that Hale-Bopp will *possibly* live up to its advance publicity. First, this comet is obviously intrinsically bright, or it would never have been discovered visually with 16" and 17.5" 'scopes when it was way out in the depths beyond Jupiter. Some experts had warned initially that the comet could be undergoing an 'outburst,' but this appears to not have been the case since Hale-Bopp's brightness has been increasing with remarkable predictability. Also, the nucleus of the wonderful Hyakutake was a mere 1 kilometer in size or so, while there is evidence that Hale-Bopp's nucleus may be as large as 50 kilometers across! Only one factor detracts from Hale-Bopp's string of pluses--its distance from the earth at the time of closest approach. As you well know, Hyakutake came to within .1 AU of Earth, but the closest Hale-Bopp will approach is 1.3 AU. My feelings are that Hale-Bopp will be bright--possibly appreciably brighter than Hyakutake. Its distance from us, though, will definitely make the head of the comet appear smaller than that of Hyakutake. The tail, however, may be much more impressive--in brightness and length--than Hyakutake's streamer and may make Hale-Bopp seem easily much more spectacular overall than Hyakutake.

That's what I think we can expect from Hale-Bopp *itself*. But what *else* can we expect?

The public: spurred-on by reports in the media, the public will be enthusiastic over the comet--and most people will have just as much trouble finding it as they did Hyakutake! But that's what we're here for. With this much lead time, it should be fairly easy



The infamous Hale-Bopp! Will it be 'Great'?

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to organize and promote public star parties. While this comet will not, like Hyakutake, dance across our skies all night, it will be a well-placed evening object during the period leading up to its perihelion, and this will encourage public interest. In my experience, few members of the general public can be convinced to rise before dawn to view even the most spectacular object. Back in the mid-sixties, Comet Ikeya-Seki put on an wonderful show, but few people other than professional and amateur astronomers bothered to look at this splendid visitor.

The media: there will be a great deal of media interest and much coverage of Hale-Bopp. As usual, many of the 'facts' presented by TV and print journalists will be wrong. Do what you can to help your local media representatives. The tabloids will UNDOUBTEDLY (it has already begun) scream themselves hoarse trumpeting the upcoming *'end-of-the-world'* brought-on by Hale-Bopp. This will cause some fringe groups, already jittery because of the upcoming 'change of the millennium,' to worry themselves into a dither. Be kind when people of this type ask you questions--try to answer their queries kindly and honestly. These people will not be putting you on; they will really be worried that the comet is going to hit the Earth, and that the government is keeping the truth from them (Our government? Never!). The Internet news group sci.astro.amateur has already been disrupted by individuals making claims of this type (some apparently hoping to make profit through the sale of books and pamphlets).

Telescope makers: I'm hoping that astronomy merchants won't put-on the same sorry show they did during Halley, but I expect things to be much the same. If you want a new telescope, my advice is for you to buy it NOW. During the time of Halley, the big players in the telescope game increased the quantity of telescopes they shipped by letting the quality of their instruments slide noticeably. Some of the most reputable outfits were guilty of this, so you can only imagine what the Tascos and Jasons were selling (Tasco has again reared its ugly head with a series of telescope ads in the mainstream science magazines--

Discover, etc.)!

As for me, I'll be out every clear night with cameras, telescopes, and wondering eyes. Won't you join me?

--Rod

From City Lights to Deep Space

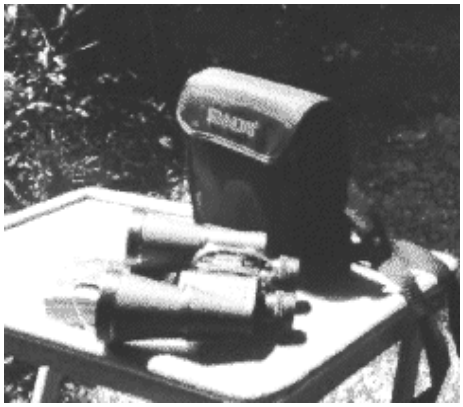
We love our telescopes; at least I know I love *mine*. But sometimes they get in the way. There are *some* astronomical sights that require wider views than are available with the tunnel vision of the medium to large sized scopes most of us own. The area of the southern Summer Milky Way is, in particular, a good example of a region that cries out for a larger field of view. So, I'm going to ask you to leave the big guns inside tonight, grab your binoculars, and head south (in the sky anyway, though heading south out of the city lights isn't a bad idea). And let's not waste any time. Isn't that PEGASUS that I see peeking over the eastern edge of the world? And do I feel a hint of a Fall chill in the air (NAW...not in *Mobile!*)? Almost before we know it, the burning fires of the south will have slipped below the horizon, and we'll have to wait another year to trace our way through this incredible deep sky jungle!

What? *You don't have a pair of binoculars!*? Well, we need to remedy that. Binocs are an indispensable tool for the amateur astronomer. Even if you *do* own a pair, you may find this discussion valuable, since it's also important to own the *right* pair. As you probably know, binoculars are classed according to their **aperture** and **magnification.** For example, a pair of 10x50 binoculars are 10 **power** with 50mm **objective lenses.** Some typical sizes are 7x35, 10x40, 7x50, 10x50, and 11x80. At first glace, it would seem simple to choose a pair of binoculars for astronomical use--just pick those with the larger aperture, i.e. 50s instead of 40s, 70s instead of 50s, and so on. But this discounts the importance of the size of the pupils of a dark adapted human eye when compared to the size of the exit pupils of a pair of binoculars.

The term *exit pupil* refers to the width of the cone of light leaving a binocular eyepiece. *If this cone of light is larger than the diameter of your dark adapted pupils, the excess light will be wasted.* It doesn't enter your eye; it falls outside the edge of your iris and never gets a chance to hit your retina. Once dark adapted, the human iris generally opens to a diameter of about 7 millimeters **in the eye of a person less than about 40 years old.** For the over-forties among us, though, **the fully adapted pupil size is often closer**

to about 5 millimeters. Thus, if the exit pupil of your binocular is *7 millimeters* in size, and the size of your dark adapted pupil is *only 5 millimeters*, **you are actually wasting some of the aperture of your binoculars.** In addition, even if your young eyes are able to fully dilate to 7 or more millimeters, you should remember that you will still be wasting aperture if you use your binocs mainly in a light polluted environment (especially one heavy in ambient light) which doesn't allow your eyes to reach full dark adaptation. Therefore, it would be to your advantage to choose a pair with, perhaps, 5mm exit pupils. How is the size of the exit pupil of a pair of binoculars calculated? Very simply. Just divide the power of the glasses into the size of the objective thus, 10x50 binoculars = 50÷10 = *5 millimeters*. 10x50s would, then, probably be a good choice for the city dweller. Another factor is **size and weight**. It may be that you find that you can't hold a pair of 10x50s steady. If this is the case, try a pair of 7x50s. These do yield an exit pupil a bit large for the city dweller or older observer, but the lower magnification means steadier images. Another, perhaps better, option is to choose a lighter pair, maybe 7x35s, which will, like the 10x50s, yield a 5mm exit pupil, and are, in my experience, pretty good performers in light polluted situations. Their smaller objectives will also sometimes produce a slightly darker sky background for the urban astronomer.

Once you've decided on the basic type of binoculars to invest in, comes the hard part: what brand? If you're determined to spend a fairly considerable sum--over $200.00, maybe--then some research and reading is in order. Phil Harrington's excellent book, *Touring the Universe through Binoculars* is a good place to start. Also very helpful is the section on binoculars in Astronomy Magazine's yearly *Observer's Guide*. **Be sure** to talk to your fellow amateurs. What are they using? At the high end of the price scale, Fuji, Nikon, and Zeiss all produce fine binoculars which are very suitable for astronomy, give incredible images, and will probably last a lifetime. In the mid-range price group,



Celestron, Orion, and Minolta are some examples of manufacturers producing good astro glasses. At the low (or rock bottom) end of the scale, there are, believe it or not, some tremendous values available. Some companies to check-out are Simmons, Swift, maybe Tasco, and (often almost in the mid-price range) Bushnell. All of these brands are capable of producing good, astronomy-suitable binoculars, but it is very important to TRY any of these BEFORE YOU BUY, since quality often varies *considerably* from pair to pair. Tasco, in particular, seems to really vary, and not only from pair to pair, but also from model to model, and year to year. Another 'el cheapo' company, Simmons, is currently importing Chinese binoculars which are a tremendous value. For $39.95 at Wal-Mart, I picked up a pair of 10x50 wide field (7°) binoculars with SHARP, coated optics, a tripod adapter socket, and a carrying case. These glasses performed incredibly well during the apparition of Comet Hyakutake. But they were my second pair. I had to return the first because of misalignment. Pat Rochford also bought a pair of similar Simmons 10x50s, and he *also* had to go back for a second pair. But it was well worth the trouble. Optically, the Chinese seem to already be where the Japanese were in the early sixties.

What should you check when contemplating the purchase of a pair of binoculars? First of all, don't buy a pair which features 'permanent focus,' 'automatic focus' or anything of the sort. None of these are suitable for astronomy. They are usually fixed-focus binoculars which will never be in focus at infinity. Also avoid zoom binocs. They aren't very sharp and are usually quite useless for astronomical applications. Finally, check the pair you're going to buy--not a sample--by focusing on distant objects in the store. Are they sharp? Do the two images produced by the binoculars instantly merge into one when you put your eyes to the eyepieces (this is tremendously important)? Is the finish OK? Everything reasonably tightly glued or screwed together? Focusing smooth? Once you get your new glasses home, try to check them on stars as soon as possible. If the image of a star is not crisp, and, most importantly, MERGED, don't keep them. Let me repeat: *If you're seeing two stars instead of one, no matter how you adjust focus or spacing, return the binoculars immediately* and get another pair (or your money back, your decision). A final test is to take a look at the Moon. Does Luna snap into focus? How much color fringing can you see (expect *some* on all but the most expensive glasses)?

Now that we're equipped with a serviceable pair of binoculars,

on to tonight's objects. This is one time I'm going to leave the city lights behind, but my wonderful Views of a Summer Evening can be pretty much duplicated from our suburbs, though maybe not as well or spectacularly as from my observing site under the dark skies of the Great Smoky Mountains.

As Dorothy, Beth and I were preparing to depart for our 1995 vacation in the Great Smoky Mountains National Forest, I wasn't thinking too much about astronomy. From what I'd heard, the fogs, storms, and (unfortunately) industrial hazes which blanket these still mysterious mountains tend to make observing somewhat problematical--if not impossible. But I was planning to take my 10x50s anyway for scenic viewing, bird watching, etc., so I thought, 'What the heck, I'll print some charts with Deep Space and pack *Stars and Planets*. You never know.' No, you never do. The first couple of nights we spent at our hotel, the beautiful **Pisgah Inn** on the Blue Ridge Parkway, did indeed live up to my expectations. We were shrouded in fog and socked-in by passing thunderstorms. But the third night...ahhhh!

The Pisgah Inn is basically perched on the side of a mountain, and each room has a balcony overlooking a precipitous, almost unobstructed, drop. There is only a small strip of ground between the inn and the mountainside, a perfect place for the skunks, who have learned to beg for goodies from the tourists, to promenade nightly. In addition, the view takes-in the entire southern half of the sky--a perfect circumstance for the Summertime observer. When it became obvious that the skies would be clear for the night, I grabbed my binoculars and charts and headed for the balcony. And headed right back into the room again--to get a jacket! It seemed odd, but I was viewing the Summer constellations and shivering at the same time! The temperature was already in the low sixties right after sunset, and it was still dropping! While I saw a few flashes of lightning peeking around the tops of distant mountains, there didn't appear to be any bad weather heading my way. All in all, it looked as if I were in for a tremendous night of viewing. There were occasionally a few clouds scudding across the sky, and there was a little haziness, but, for the most part, conditions were great!

As I began to observe, the cool temperature was completely forgotten. Here, out in the dark, perched on the side of a mountain, I really felt as if I were walking the bridge of my own personal starship! And visible right off the bow was Old Scorpius. Orion's ancient enemy sure looked great in a dark sky, unconstrained by trees and houses. Using my binoculars to scan the Scorpion's tail region, I almost immediately picked-up the Butterfly Cluster. In a telescope, this is a wonderful sight, but, I had always been puzzled as to how it earned the nickname 'Butterfly.' Through my binoculars, however, the reason was obvious: two streams of stars flow away from the cluster's center, and indeed give it the appearance of a surreal butterfly flitting among the countless bright wildflowers in the Milky Way star fields. After staring at M6 for quite some time, I panned over to nearby M7. I didn't think it was possible, but M7 was even more beautiful than the ethereal M6; its many stars, which were well-resolved in binoculars, seemed to spread over more than a degree of sky!

I don't normally consider globular clusters a very good subject for even giant binoculars, since binocs just don't have the power and aperture needed to resolve most of these giant star-globes. But since I was in the area anyway, I moved toward Antares to check out the Scorpion's two most prominent globs, M4 and M80. M4, located only about 1.5° from Antares, was surprisingly impressive. While it was basically only an amorphous globe, it was large and bright, and, incredibly enough, seemed almost on the verge of resolution. When I returned home, I checked the specs on this cluster, and found that I wasn't just imagining that the glob was almost resolved. Some of its brightest stars are near magnitude 11.0 (or even slightly brighter), and are probably resolvable in well supported 16x70 glasses since the structure of this cluster is quite loose. 20x80s should definitely resolve M4. I searched diligently for M4's companion cluster, little NGC 6144, but didn't see even a trace of it . I really didn't expect success with this little 10th magnitude glob, since it's usually only seen to advantage in at least a 4" scope at fairly high power. Finally, I moved a couple of degrees farther north and into the realm of M80. The cluster was easily visible as a subdued glowing disk, but, unlike those of M4, its dim stars gave no hint of resolution.

As the sky grew darker, it became impossible to ignore nearby Sagittarius. The Teapot was definitely boiling, with steaming starclouds pouring out of its spout and into infinity! For the moment though, I avoided the galactic center. I had been observing globulars, and was anxious to see how Sagittarius' gem, M22, faired in binoculars. I wasn't disappointed. M22 displayed a large glowing disk, and like M4, it almost hinted at resolution. This is to be expected since M22 is, like M4, rather loose, and contains some relatively bright stars. It should be quite a spectacle in 11x80 or 20x80s! Now

I was ready to dive into the real Milky Way, and what better place to start than the Lagoon?

The Lagoon Nebula, M8, was an obviously hazy spot with the naked eye, and in my 10x50s the nebulosity was really quite extensive. Also prominent was the open cluster NGC 6530, which is superimposed on the nebula. In binoculars I had an experience quite similar to that presented by some planetary nebulae and their central stars. When I looked directly at M8, the star cluster was dominant; when I averted my vision, the nebulosity in all its glory sprang ('blinked' like the Blinking (planetary) nebula)into existence. With M8 so bright, I had hoped that its sister nebula, M20, The Trifid, would be easily seen. I was a little disappointed, since The Trifid, while visible, was little more than a small smoky spot.

Still hungering for nebulosity, I moved north into the area of M17, the Swan (or Omega) Nebula. I didn't really know what to expect with this object. It's almost unbelievably beautiful in scopes, but this nebula is somewhat dimmer than M8. Actually, I was quite pleased with the appearance of the Swan through my 10x50s. While it didn't really jump out at me, it was easily visible as a very definite nebulous streak prominently displayed in a very beautiful field. I didn't detect the 'Swan's Neck,' but I had the feeling that 11x80 glasses might reveal it.

After staring at the beautiful Swan for a while, I put down the binoculars with the intention of taking a short break. Uh oh! There seemed to have been a malfunction with the 'viewing screen' on the bridge of my starship. The stars just didn't look as bright as they had a few minutes ago. A glance down the mountainside showed the reason. One of the area's notorious foggy mists was starting to roll in. It looked as if I had time for one last object.

I chose M24, the Small Sagittarius Star Cloud. This object, which is one of the brightest of the Messiers, not only looks good in binoculars, it demands them. Its huge size, about 2° by 1°, makes a normal-field telescope a bit hopeless for viewing this object in its entirety. In my 10x50s, I saw a combination of countless tiny stars and clouds of nebulosity composed of further untold numbers of unresolved stars. I felt as if I were indeed looking into the secret, fiery heart of our galaxy!

Quite a night of viewing! Do I recommend the Great Smoky Mountains as a good observing site? Well, I certainly recommend the Smokies as a vacation site, but the capricious weather often makes viewing a catch-as-catch-can situation. That's the beauty of binoculars, though. They can be packed away in a small space, used to look at wildlife or scenery during the day, and then magically turn into your own personal spacecraft with the coming of the night!

Book of the Month:

Luginbuhl, Christian, and Skiff, Brian, *Observing Handbook and Catalogue of Deep Sky Objects*. 1989. Cambridge University Press, Cambridge. ISBN 0 521 25665 8.

This book is currently the ultimate deep sky guide. Indispensable if you consider yourself a hard-core deep sky observer (or aspire to be one)! Look for a review soon.

--Rod

SSSP '96

Sourthern Skies Star Party Held in Bolivia

Astrobytes is missing from this issue of Skywatch because I'm still in the process of evaluating major upgrades to two very important programs: Megastar and Deep Space. In the meantime, here is a WONDERFUL article by Judy Anderson outlining her recent trip to Bolivia for the Astronomical League-sponsored Southern Skies Star Party...

The first Southern Skies Star Party (SSSP) participants arrived in La Paz, Bolivia on Sunday Morning, June 9th 1996 at about 6:20am in the morning. Our 757 had flown in over the top of a mountain range, slowly circled down into a canyon, and landed at the highest major airport in the world at an elevation of 4018 meters, or 13,179 feet, or 2.5 MILES!

As we sat in the terminal shivering from the 26° temperature after leaving Miami a mere six and a half hours earlier, headaches and dizziness began as altitude sickness overtook us. Most of us decided that it was time for another altitude sickness pill--or at least an aspirin--until we became acclimated. All the luggage and equipment, including trunks full of telescopes, was loaded onto our bus by sheer manpower (thankfully the workers were very adept at their task). Each seat on the bus was equipped with a blue blanket in lieu of a heating system. It took about an hour and a half to ride to Inca Utama Hotel on the southern shore of Lake Titicaca. It was a beautiful three star hotel, restaurant, spa and museum. While we registered in the lobby, white coated and gloved waiters served coca tea, the South

American cure for altitude sickness.

We were anxious to set up whatever gear we had at our observing site behind the hotel on the shore of the lake. The hotel furnished plugs, batteries, tables, chairs, and were most accommodating. At noon, Ken Wilcox, our Fearless Astronomical League Leader, called a short meeting, after which we had a delightful brunch of homemade soup and home baked rolls.

I made it up the three flights of stairs to my first-floor room very slowly due to the thin atmosphere. The room had bay windows that overlooked the lake, and also had a private sitting room with sofas and a refrigerator. I turned on all the heaters and finally got the temperature up to 59° in my bedroom! When I spied the electric blanket on the bed, I quickly decided it was naptime! The electric blanket also worked very well to warm my long underwear and nightclothes every evening after dinner.

By 7:00pm it was completely dark; the temperature was about 40° with a slight breeze coming off the lake. The skies were clear and the seeing was excellent! The hotel turned out all outside lights and covered the kitchen windows. I had studied southern sky maps for two weeks before I left home, and had decided that I would try to get my Southern Skies Binocular Certificate. Since I'm so slow at finding objects, I thought that I had a chance to locate 50 objects in a week with my new Celestron Ultima 9x63 binoculars. George Byron had loaned me his Astroscan telescope to take with me, and when I located the Tarantula Nebula (NGC 2070) in the large Magellanic Cloud, I decided it was time to set-up the Astroscan! The Tarantula was beautiful with a low power 25mm eyepiece. It was spread out all over the field with those long, spidery nebulous tendrils!

Each night I went into my usual routine of observing for a few hours, going in to warm up for an hour--maybe taking a nap or going into the restaurant to enjoy a cup of hot chocolate (*caliente chocolahtay*)--and then going back out to observe some more. This let me observe at different times all night. Of course, every time someone invited me to look through their telescope at a beautiful object (such as ETA CARINAE), I couldn't resist!

At 5:15am on 6/14/96, I saw Comet Hyakutake through the 10" Dob that the Astronomical League had donated to the small observatory on the site. It looked like a fuzzy blob of a comet, but the tail was a short fan shape (maybe 5°)--really unusual looking. It was no longer a naked eye object.

Every day there were sightseeing trips offered. One day I went on a shopping trip to La Paz and to the museums. Another day I took a hydrofoil ride to the ancient Inca city of Copacabana on Lake Titicaca, and visited the Island of the Sun.

The last night there was a program in the Horca del Inca Observatory at the hotel. We sat on low padded benches and heard the old local names of the constellations and were told how the fishermen had used the stars for navigation on the lake. The program concluded with the roof being rolled back so we could enjoy the beautiful Milky Way, which was shining above us in all its glory, and the SOUTHERN CROSS, which was looking *so* majestic!

I can't list all the beautiful objects I saw. There were eighteen of us who really had a great time observing . I received my Southern Skies Binocular Certificate, and I know a couple of others people who also acquired theirs. Probably the most productive member of our group was Vic Winter (whose telescope and luggage were lost until mid week). He has photographs on the Internet already. If you have access to the World Wide Web, his URL address is: http://www.icstars.com. Scroll-down to "96 Southern Skies Star Party' to view the slide show. His celestial pictures are fantastic!

If you are interested, next year's SSSP will be held the week of June 28th-July 5th, 1997. Watch the Astronomical League Journal, *The Reflector*, for further details!

--Judy Anderson

Here's an interesting article by MAS member George Byron about the still-mind-blowing (to me anyway) theory of time dilation as applied to space flight...

About Time!

I've been reading a very interesting book by Paul Davies. It's titled *About Time: Einstein's Unfinished Revolution*. In the second chapter, Mr. Davies delves into time-dilation. 'Time-dilation' is the effect of time slowing down as a traveler speeds through space. To find how much time is dilated, Davies gives Einstein's formula. The formula states:

$$d = \sqrt{(1 - (s/c)^2)}$$

Where d is the time-Dilation, s is the Speed of the traveler, and c is the speed of light. Both speeds need to be in the same units. An example using 240,000 kilometers

per second (km/s):

s/c

$240{,}000/300{,}000 = 0.8$

$0.8^2 = 0.64$

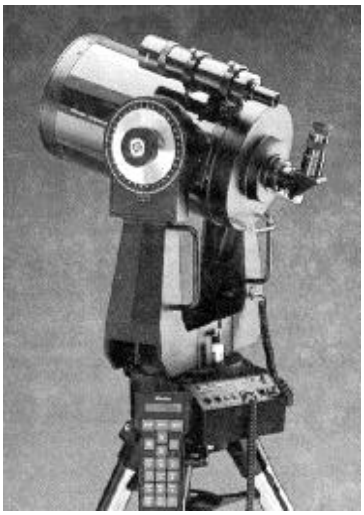
$1-0.64 = 0.36$

$\sqrt{(0.36)} = 0.6$

Time is dilated by six tenths (0.6) at eight tenths (0.8) of the speed of light. Sixty (60) minutes would be dilated to thirty-six (36) minutes.

What is the effect of time-dilation on clocks? Examining a trip to a star eight (8) light years (lys) from Earth and back will illustrate time-dilation on clocks (These clocks read years and months). 'Rhonda the Rocketteer' is carrying a clock and a telescope. 'Ellie the Earthling' also has a clock and telescope. The clocks will keep track of each of their times. Their telescopes will allow each to see the other's clock. The rocket will travel at 240,000 km/s (It is a special rocket requiring zero acceleration time). Rhonda begins her voyage just as the year 2000 begins, so both Rhonda's and Ellie's clocks read "2000y-00m" when Rhonda leaves the Earth. Since the star is 8 lys from Earth, at 0.8 of light speed it will take 10 years Earth-time to reach the star. So Ellie's clock (back on Earth) will read "2010y-00m" when Rhonda reaches the star. But when Rhonda uses her telescope to look at Ellie's clock she does not see "2010y-00m". Because Rhonda is 8 lys from Earth, Ellie's clock reads "02y-00m"after waiting for the signal get to her. *The signal is eight years old*. Rhonda sees 8 years into her past. However, Rhonda's clock reads 6/10 of the Earth clock, so it reads "2006y-00m" when Rhonda reaches the star. Ellie, though, will not see Rhonda's clock read "2006y-00m" until the year 2018, again, because of light travel time. In both cases, each clock will appear to be running *one-third* the elapsed time of the other (Ellie 6y/18y = one-third and Rhonda 2y/6y = one=third). One-third would hold true *until* Rhonda starts back to Earth. When Rhonda does return to Earth *her clock will read "2012y-00m"* and *Ellie's clock will read "2020y-00m"*. Did Rhonda travel faster than light (16 lys in 12 years)? *Not at all.* Rhonda traveled 16 lys relative to Earth in 20 years. She went only 9.6 lys, relative to her rocket. That is, 12 years times eight-tenths (0.8) of the speed of light.

--George



My Back Pages

Stories in the Sky

Beginning with this issue of Skywatch, AstroPoems will alternate every other issue with Stories in the Sky, a series detailing the myths and legends behind our familiar constellation figures...

Coma Berenices, one of the most beautiful (though subtle) of the constellations, symbolizes one of the most beautiful stories from ancient history (or legend, perhaps). Berenice, the beautiful (some say second only to divine Aphrodite in lustrous beauty) wife of King Ptolemy of Egypt was renowned far and wide for her beautiful and luxuriant golden hair. Berenice, truly noble of spirt and faultless among mortals, loved her husband very, very much. Their marriage was almost unbelievably happy, with nobles and commoners alike whispering in wonder about the uncommon devotion of this husband and wife. All too soon, though, the happiness of the pair was, sad to tell, interrupted when the King was called away to war. Berenice wept and prayed to the gods night and day, finally vowing to cut off her famous locks and offer them as a sacrifice if only her husband would be returned to her safely. As members of the court watched in horror, Berenice did indeed cut her golden tresses and place them on the altar!

Now, the gods, who were watching--as they always do--wondered at the perfection of Berenice's spirit and the divine goodness of this mortal woman. Aphrodite, in particular, was mightily impressed by the devotion of Berenice, and placed King Ptolemy under her protection.

Finally, one beautiful Nile evening when the world, the gods and men were still young, the King returned to his palace, hurrying to be reunited with his wonderful wife. Ptolemy rushed into the presence of Berenice and was struck dumb! There stood his beautiful mate with her head all shorn! The King was exceedingly angry--the memory of Berenice and her golden hair was all that had sustained him while he was at war braving danger after danger and facing incredible hardship. Blaming his chief minister, he drew his sword as if to slay the man. But just before the King's sword flashed down, Aphrodite appeared, her radiance causing all within the chamber, including the King, to fall to their knees! Taking the King by his hand, Aphrodite led Ptolemy out into the warm Egyptian night. Gesturing, toward the sky, Aphrodite pointed out an astoundingly beautiful splash of stars where none had been before! This, she said, was the hair of Berenice, which the gods had placed in heaven in eternal remembrance of her devotion and love. Weeping, the King hurried back into the palace to be reunited with his wife. *And they lived happily ever after*.

Even today, long after this fabled King and Queen have returned to dust, we still gaze in awestuck wonder at Berenice's shining immortal tresses.

--Rod

Club Notes

June 1996 Monthly meeting: Your editor had to miss this meeting due to being at sea aboard a brand-new *Arleigh Burke*-class guided missile destroyer, but club President Pat Rochford reports that an interesting and enjoyable time was had by all. In addition to the presence of a couple of new members, and a few old members who hadn't been seen in a while, some interesting leads on a possible dark site for the club were presented.

July 1996 Monthly Meeting: Most of this meeting was concerned with plans for an August club star gaze at a dark site. Since nothing definite has turned-up in our area, President Pat will contact the EAAA (Pensacola club) in hopes that we can use their dark site. Following this discussion, your editor showed some video tape he had recently shot of the Moon using an 8mm camcorder and a 12.5" Newtonian.

August 1996 Monthly meeting: The August meeting of the MAS began with a demonstration by Pat Rochford and your Editor of proper mirror cleaning techniques for Newtonians. Following this demonstration, which used the primary of the ESC's recently purchased 8" Meade Dob, club members helped assemble the ESC's other new telescope, a Meade 8" Starfinder Equatorial. The meeting concluded with final discussion of the MAS' upcoming 1996 Perseid Stargaze, which was scheduled for 10 August. After the meeting wound-up, several members took the ESC's new 8" Dob outside for some initial tests. Your Editor was pleasantly surprised at how well this inexpensive telescope performed--it provided wonderful views of Jupiter and M57 (The Ring Nebula) despite less-than-optimum observing conditions.

Upcoming Events: **We're definitely planning a PUBLIC STARGAZE for the exciting September 26th total eclipse of the Harvest Moon! Details were not set at press time, so if you are (were) unable to attend the 4 September meeting of the MAS, please contact the ESC's Dianne Martin for information as to times, etc. Please come out**

and support your club with your telescope and your knowledge!

Editor's Musings (OnceUpon a Midnight Dreary...)

WANTED TO BUY: I'm looking for a **Spitz Junior Planetarium** in good shape for a *reasonable* price. Age is unimportant, but I'd like it to be complete and basically operational. The presence of the original (and beautiful) box this 'toy' came in is a plus, but not necessary. Another plus would be the 'constellation figure' slides which were used with the 'pointer'--these were definitely included with some units. If you have one of these little projectors you might want to get rid of, or know where I might find one, please contact me...

I'd be very happy to find one of these wonderful little planetariums (no one seems to be producing anything quite like them now--all the star projectors currently in the toy stores display unattractive black stars on a white background), but my ultimate dream planetarium would be a computer program. I know, I know, there are *already* MANY computer planetarium programs! But *mine* would feature a photographically realistic sky, and would be used with a VIRTUAL REALITY HEADSET! When you'd turn your head, the headset would track your movements, and you'd see the appropriate part of the sky. Of course, you'd also be able to zoom-in on planets and deep sky objects and call up data (text or audio) on the centered subject. I think all of this is basically doable now, but I guess we'll have to wait 'til virtual reality equipment becomes a little more common and the resolution of the displays improves a bit (and maybe for the next generation of Intel processors--but that should only be about a week!)...

I hope you're having as much fun reading Jay Ryan's 'Starman' comic strip as I am! I predict big things for this artist/writer whose work is currently 'syndicated' in at least 70 astronomy club journals. I especially hope that you'll pass 'Starman' along to youngsters of your acquaintance after you've finished enjoying these wonderful little astronomy lessons!

Are you looking forward to this October's 14th Annual Deep South Regional Star Gaze (DSRSG)? I know I am. If the skies are as good this year as they were last year, it'll be quite a ride! One thing in our favor this year is the early date for this star party. We seem to have better luck with October's semi-sultry weather than we do with November's gales. In October we're (I hope) out of the hurricane season, and are usually enjoying a spell of nice weather before the coming of the November storms. In fact, the worst weather of any star party I've ever attended plagued '94's DSRSG, which was held in November. We were afraid that our scopes would literally *FLOAT AWAY!* If you're new to the club/amateur astronomy scene, and need further information about this event, don't hesitate to contact me or one of your other fellow observers! MAS has been *very* well represented at DSRSG in recent years and we're hoping for another **solid** club turn-out for DSRSG '96!

Have you sent your E-mail address to the **Auburn Astronomical Society's** Russell Whigham so he can put you on the mailing list for his WONDERFUL online AAS newsletter? Russell can be reached at: **rwhigham@mindspring.com**. While you're at it, you can check-out the AAS' beautiful new World Wide Web Homepage at: **http://www.mindspring.com/~rwhigham/aas_home.htm**. This is a club that's ready to move into the 21st century!

--Rod

RUMOURS

And now, fresh from the HERMETICALLY SEALED MAYONNAISE JAR, the stories the BIG ASTRO MAGS don't print (maybe for good reasons)!

In sad news, I have an UNCONFIRMED report that former **Coulter Optics owner Jim Braginton** has passed away. This story supposedly originated with **Sidewalk Astronomer John Dobson**, who apparently knows Braginton's widow, and has spoken to her recently. If true, Jim Braginton will be missed. We wish him peace, and hope his spirit is now free to fly among the beautiful galaxies and the 'Anodized Metallicburst' nebulae he used to crow about in his *wonderful* old user's manuals (hang on to these)...

More Questar rumors: I hear that the company may be on the verge of making a comeback. Apparently, they are still producing the Questar 3.5 and 7 (in astronomical configurations), and they also supposedly even have a

couple of **12s** ready to go--**if you have the $40-50,000 ready to go!** In addition, the company is said to have a new advertising campaign prepared, so look for some new ads soon (though probably *not* on the inside front cover of *Sky and 'Scope!*). This sounds hopeful for this long-time astronomy-world fixture, **but how will Meade's new $500.00 ETX Maksutov affect Questar's prospects?...**

The *NEW* Coulter, MURNAGHAN Instruments, is going ahead with plans to remarket the Odyssey Telescopes. From an interview I saw with the owner, Patrick Murnaghan, I gather that the telescopes are to essentially remain unchanged. The few changes to be made to the 'scopes are: the addition of a bushing for the ground board pivot, the azimuth bearings are to be replaced with Teflon pads (Magic Sliders), and the ground board will be coated with something 'like' Formica. Also, a 'rudimentary' 9-point mirror mount will be used with the 10 and 13.1" telescopes. Apparently the 'plumbing parts' focuser will remain as-is for now, though Mr. Murnaghan allows that he'd like to upgrade it-- if possible. The surplus-binocular Kellner eyepiece which Coulter owners know so well (and which really isn't that bad--except for appearance--being about as good as the 25mm Modified Achromat Meade ships with its scopes) will also apparently remain until supplies are exhausted. It isn't clear from the interview whether the basic finish-paintjob-appearance of the 'scopes is to change. But, as I've said before, in my opinion it's vital for the 'looks' of the Odysseys to be improved if they're to compete with the only slightly more expensive Orions and Meades. In any event, these new-old Odysseys are set to begin shipping on 1 August 1996...

In Meade ETX news... It *appears* that the blush is off the rose as far as feelings about this little 90mm Maksutov go. While reports from all quarters indicate that the optics in this **Questar wannabe** are outstanding, early opinions (from your fellow amateurs) that the telescope was mechanically 'almost as good' as a Questar have lately been **revised downward**. It appears that many of these scopes have mechanical problems: sticky declination movements, rough R.A. slow motions, drives that take 'a couple of eyepiece fields' to engage, etc. We also hear that there's a LOT more PLASTIC in the mounts than was originally obvious. **Nevertheless...**most of the folks who've bought these scopes seem happy with them, and a few problems are not uncommon with a new piece of equipment. I only hope that the experience of *one person* who set out to buy an ETX, and had to try SEVEN to find one 'acceptable' unit is unusual. Please remember, too, when you hear these stories, that some people are *very* hard to please (actually not a bad trait to have when looking for a scope), and that what they consider 'crap' may give you years of pleasure. For up-to-date info on the revolutionary (still my opinion) Meade ETX, check Usenet's sci.astro.amateur, or http://metxug.elendil.com (on the web), or subscribe to the ETX mailing list by sending 'subscribe metxug' (without the quotes) in the body of a message addressed to mgr-metxug@elendil.com. **OR**...if you 'don't do Internet,' watch this space for more on the ETX story soon...

Hey, what the...?! Is it just my imagination or have the big astronomy mags been short on **telescope reviews** lately? For example, the hugely popular, complicated and expensive LX-200 series from Meade has never, to my knowledge, been reviewed in *Sky and Telescope*. While a 'review' of the LX-200 SCT *did* appear in *Astronomy* magazine a few years ago, it's hard to imagine a **shallower** critique. To give another example, the HIT 'scopes from Parks seemed fairly revolutionary when they were released some years ago, but they were totally **ignored** by *both* magazines. One of the most popular varieties of amateur telescope today, the big Dobsonian, has only received passing notice (the Obsession 20" *was* given fairly complete coverage by *Astronomy*; *some* smaller truss-tube Dobsonians have been seen in *Sky and Telescope* over the last several years). **I'd** like to see an in-depth critique of a telescope EVERY MONTH in both magazines. **What gives here?**

Finally, while we're still waiting on the release of Celestron's long delayed **Ultima 2000**, Celestron is, according to HIGHLY PLACED SOURCES, preparing to announce another new telescope, the **Faststar**. This SCT will supposedly be usable at *3 focal lengths*, **f2.9, f10, and f13** and will include an built -in CCD camera from Pixcel. Well... sad story, I'll believe this when I see it! Ultima 2000 to be given the has announced a new sophisticated 'scope! Tune in next time for details!

--The Anonymous Astronomer

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When you first get started in amateur astronomy, it seems to
be a loner's pursuit. But look back over the years at all the wonderful friends you've made in this hobby! Your astronomy club is a great way to keep in touch with these friends. When was the last time you attended a meeting? Helped-out at a public star-gaze? We miss you!

Peace,

Rod & Dorothy

Why is this man smiling? Because it's almost time for another DSRSG! Make plans now to attend this year's Deep South Regional Stargaze!

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