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Rod Mollise's

# Skywatch



## Big Annual Make and Do Issue!

### A LIGHTWEIGHT ALT-AZ TRIPOD FOR THE SHORT TUBE 80

Len Philpot

With apologies to Bob and Lisa Summerfield, I have my own version of Astronomy To Go - My Orion Short Tube 80 coupled with a lightweight oak tripod and alt-az head. Like a lot of amateur astronomers, I've discovered the fun of this little scope, whether from Orion, Celestron or any other of the numerous vendors importing it. It's versatile, inexpensive and performs very well, all things considered. It's certainly not a Genesis, but you can buy many 80s for the price of an apochromat.

The main problem for me was how to mount it. Initially, I used it on a Bogen video tripod with a fluid head. That's very good for terrestrial viewing, but it's a bit shaky for astronomy (even with the counterweight I devised). My 10x70 binoculars, great - the ST80, not so great. So, I purchased an EQ-1 mount and tripod from Rex at AstroStuff while at the 2001 Texas Star Party... you know how it is: That

money is no good once you get back home! However, as good as the little mount is, even by the end of observing that Saturday night, I realized it was just too short for me (I'm 6'2"). Observing at zenith was a real neck-killer! However, it wasn't until after TSP 2002 that I finally got around to building something taller. The result is this red oak tripod and mount.

My primary requirement was that the tripod allow me to observe at reasonable altitudes without undue bending or crouching. This meant the telescope had to be at least 60" high when mounted. However, I also wanted the tripod to be portable, so that meant it had to collapse to a reasonable size. Since these two requirements tend to work against each other, I compromised. As built, it collapses to approximately 44" with the mount head attached, less without it. Fully extended, it's 71" at



the altitude axis. However, the tripod is not as steady as I'd like at that height, so I tend to use it around 62" or so (which is still very comfortable).

I like to work with wood, but I'm no Norm Abram, nor do I have his collection of power toys. In fact, I don't even have a workshop - Each time I do anything, it's a process of "drag it out into the garage, set it up, work, take it down, put it away back in storage and clean up". I built this using a router and small counter-top router table, small drill press, hand sander, hand drill, jigsaw and assorted hand tools. A table saw would have been useful at times, but I worked around most of it by getting all the long pieces of oak from a local millworks, sized and jointed. The balance of the oak was purchased at my local Lowe's home center, from their Choice Wood selection (which is also sized and jointed). In fact, the entire tripod was made from the .75"x.75" milled stock (legs) and "Lowe's oak" in .75"x1.5", .25"x6" and .5"x6" sizes of various lengths. The only exceptions were the metal parts (obviously) and the tray bottom, which was made



from a piece of .25" plywood I had on hand. Where possible, I rabbeted the joints of the saddle and "rocker box", joining them with screws and glue.

The mount is conventional in design, similar in concept to the alt-az Tele Vue mounts, but wood

rather than metal. The offset of the altitude axis allows for zenith access and the legs are continuously adjustable. The leg clamps and brass knobs were made for me by a friend once I discovered it would be difficult to impossible for me to fabricate clamps of acceptable quality. For a while, I almost decided to make collapsible, but not adjustable, legs. Such a design would have had a middle component that (rather than sliding) simply pivoted up to collapse once a couple of bolts were removed. This is a fine system, but just the same, I'm glad my friend came through for me! The center piece of each leg is guided by the clamp and a small piece of Sintra (plastic) that rides in a groove milled in the inside of each of the other two leg components. A double-sided Velcro "riptide" is attached to one of the legs and secures all three when folded (each leg has a small square of Velcro on the bottom outside edge).

Prior to completion, a concern of mine was whether or not the motions of the mount would be smooth enough for easy observing. Since the design of the altitude bearings

(specifically, the actual materials) was determined on the fly while I worked, I was unsure how well they would work in practice. Well, I'm delighted to say they work very well. They consist of a 1.125"x.5"

brass disk that rides on two Teflon pads. A .5" wide brass strip lined with adhesive felt serves as a tension clamp over the top of each bearing disk, and a thumbscrew allows for fine tension adjustments. The azimuth axis is the usual Formica-on-Teflon bearing, but a couple of thumbscrews underneath

allow a fine degree of azimuth friction control. I obtained the brass disks from OnlineMetals.com ([www.onlinemetals.com](http://www.onlinemetals.com)). They were just cutoffs from bar stock and I had to sand and finish them as well as possible. The knobs (other than the leg clamps) were obtained from Reid Tool Supply ([www.reidtool.com](http://www.reidtool.com)) and my local hardware store.



I was keenly aware that by using such small, long stock for the leg components, there was a potential for shakiness. By making the tray rigid and tightly attached to the legs, the tripod is acceptably steady. I say "acceptably" not in a negative sense, but rather in acknowledgment of the fact this is a lightweight tripod designed for a lightweight scope - Just don't put your C14 on top of it! It's perfectly adequate for the ST80, but if I had larger scopes destined to be used on it, I'd have made it more massive. Given the silky smoothness of the mount axes, there's no need to subject the tripod to any great stress, so vibration really isn't a problem. I don't generally use tripod trays a great deal, but beyond the stiffness it adds, it's useful at times. The bottom is covered with a piece of



green felt, attached with spray adhesive and captured under the rabbeted edges of the tray fences. The legs are attached to the tripod cap with stainless steel carriage bolts and plastic hand screws (with threaded brass sleeves).

To qualify as "Astronomy to Go", however, the telescope needs to be as portable as the tripod and mount. By using a large rugged toolbox, I've got almost everything I need in one place. In the bottom of the box, the scope, counterweight (for the Bogen tripod), red-dot finder and Celestron 10x25 binoculars are cradled in foam. In the tray are oculars, diagonals, filters, a 6x30 finder, planisphere, Pasachoff and Menzel's Field Guide to the Stars and Planets, The Constellations by Richard Dibon-Smith, a notepad, an ocular performance reference chart, red LED flashlight, extension tube, bug spray, assorted hardware items



and even a camera T-ring and adapter... whew! About all I need in addition to this (for any quick outing) might be a specific book or chart and maybe a folding chair. Another plus is that in a star party scenario, I can quickly put just about everything back in the plastic toolbox where it's safe from the weather, even if it sits in the rain.

Of course, just about when I get all this together, along comes the West Nile Virus... !

If I were to do it again, what would I change? Well, given that it's designed specifically for this scope, not too much. However a few things could be improved :

\* The leg clamps now use .25"x20 threads, which are a bit coarse. 24 or 32 TPI (turns per inch) would provide easier and more secure clamping. 20-pitch threads work OK, but I always twist them pretty tight so they don't loosen.

\* The saddle to which the scope clamps was designed to allow for balancing via a slot through which fits the clamp screw. It works, but the knobs of the scope touch if it's shifted too far forward. This needs to be addressed.

\* It wouldn't hurt to make the legs a bit beefier, but only a bit. Maybe instead of .75" square for the center section, make it 1"x.75" instead.

\* Possibly (just possibly) fabricate the tripod "cap" from aluminum instead of wood for the increase in rigidity. However, this is questionable.

\* Make one of the tray attachment points a hinge so it can be left attached to the legs when the tripod is folded. However, again this is questionable since it will reduce rigidity.

Plans? I don't have any. I drew out individual pieces here and there, but by and large, the tripod was designed in response to what materials I could obtain and what I planned to do was often changed during construction. All in all, I'm very pleased with the way it turned out. Although I also have a homebuilt 10" Dobsonian and a Tele Vue Genesis, this scope is as much fun as either of them. Now, to just get rid of those pesky West Nile virus mosquitoes...

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## A Home-Made Wedge-Pier for ETX 90

Pat Rochford

In the last issue of Skywatch I wrote about a permanent wooden pier and wedge that I built for my 8" LX200. Pleased with the way it turned out, I decided to try the same sort of concept for something a bit smaller. Read on and see what you think about this idea.



Since it first debuted in 1996, I've had my eye on the ETX 90: the perfect little "grab and go" scope with excellent optics on a very compact, usable mount. (I'm speaking of the original version, now referred to as the **ETX 90RA**.) But I just couldn't find it within myself to part with the \$600 it would take to call it mine.

Then one day, along came the EC version and the price of the RA dropped considerably. Still too much to justify, though, for a man who already has a house full of telescopes. Eventually discontinued (with apparently a rather large stock available), the price of the non-goto-capable ETX dropped to and hung

around the 250 US\$ mark. Tempting. Very tempting.

But still just a *tad* too high to bite on. And then it happened. Astronomics finally figured out that I'd swallow the hook at 150 US\$ and the rest is history.



The ETX turned out to be everything I'd hoped for. *Incredible* optics just like everyone said (75X per inch of aperture on the moon!) and, although not the mechanical quality of a Questar, still plenty good enough to satisfy my needs.

All except for that cute little table-top tripod, that is. Remember the ad photo showing the ETX sitting next to a Meade coffee mug? What a great shot--its compact size literally jumps out you. What you *didn't* see, though, was the guy drinking the coffee. He was apparently a **midget-contortionist**.

There is just no way to look through an ETX that is sitting on a table or the hood of your car without twisting your body into positions it was never meant to assume. It took all of about five minutes to figure out some sort of tripod or pier was **required**.

There *is* a tripod made by Meade

specifically for the ETX series, but it sells for 199 US\$ (also an earlier version available on the used market, but it wasn't a very good design, apparently). It would have defeated the purpose of getting the ETX at such a bargain if I had to spend more for a tripod than for the scope itself! I decided to see what I could come up with on my own.

After a few sketches and some time with a calculator, I came up with a very workable solution. The wedge-pier seen in these pictures provides polar-aligned, stand-up viewing for about 20 US\$.

The whole thing is made from a quarter sheet of  $\frac{1}{2}$ " birch plywood and a six foot piece of clear 1"x 4" stained and coated with urethane for protection. The eyepiece height when pointed at the zenith is 54". It weighs 21 pounds including the ETX.

The pier is 4  $\frac{1}{2}$ " square, 48" tall, and is nailed and glued together. The four feet, each 14" long, are cut from the 1"x 4". They are two inches wide where they attach to the pier (nailed and glued also) and drop down to a point on the end, allowing the wedge-pier to sink just a little into the grass. This relatively small "footprint" is quite sufficient since the ETX is so compact. I wouldn't recommend it with a refractor or Newtonian, though. A handle is placed at the balance point for carrying it once you've cleared the doorway.



The wedge is made from the remainder of the  $\frac{1}{2}$ " plywood. As can be seen in the pictures, the

mounting plate for the ETX drive base is cut at a 60 degree angle, which raises the polar axis to 30 degrees - my latitude. (Obviously you would cut an angle to suit your own location.) It is not adjustable, but for casual use it works just fine. There is a small hole cut in the mounting plate to allow access to the on-off switch--something Meade did not allow for when they designed their tripod.



The wedge incorporates two places for holding a few accessories, a small open tray that will hold two 1  $\frac{1}{4}$ " eyepieces and a semi-covered space (inside the wedge) for the lens cover and another eyepiece or two.

Although the wedge-pier can be tucked into an automobile, it probably is best suited for trips from the den to the backyard. A collapsing tripod like the Meade #884 would be better suited for making long trips. However - the birch plywood looks much, much better standing next to the fireplace than an aluminum tripod!

I now find myself using the ETX quite frequently, particularly with Saturn rising at a more convenient hour now. And it's a quick way to check for seeing conditions to determine if it's worth the extra effort

to set up one of my larger scopes. So, if you've got an ETX, \$20 and a free weekend why not give it a try?

## EZ Collimator by EZ Telescope

Stu Forster-Syracuse  
Astronomical Society



Every so often a better mousetrap is developed, and that's the EZ Collimator. Laser collimators have been dropping in price over the last several years, and some generic brands sell for \$30. But most still require you to check for the return beam's red spot on the laser housing when adjusting the primary

mirror by leaving the mirror end of the tube and moving to the skyward side of the tube.

The secret to the EZ-Collimator is the 45 degree window which is oriented toward the primary mirror end of the tube assembly. The returning laser beam can be seen from the mirror end of the tube and the observer does not have to keep changing position to see the effects of small adjustments. When the beam disappears into the hole in the center of the window, the scope is collimated. This unit is both labor and frustration saving.

The caveats of squaring the focuser to the optical tube and the need to make sure the collimator is properly seated in the focuser hold with this device and any other collimation aid.

The EZ-Collimator comes in both 1 1/4" and 2" sizes at \$89.95 and \$109.95 respectively. It's available from EZTelescope at <http://www.sunflower.com/~clafever/ezt/index.html>

Overall I give it a hearty Thumbs up, and I'm jealous that I didn't think of it first.

## SkyTools2

### All You Need?

#### Uncle Rod

Is there such a thing as an astronomy program that's powerful, useful, easy to use, *and* attractive? I didn't think so. Not until I tried Greg Crinklaw's **SkyTools 2**, that is. "ST2" is one of the most professionally executed amateur astronomy programs I have ever seen. *It looks good and feels good.*

*What's SkyTools 2?* As I've pointed out on more than one occasion, astronomy software generally falls into one of three categories:

**planetariums** (a "realistic" night sky on your monitor), **computer atlases** (A super Uranometria that lives on your hard drive) and **planner-loggers** (giant databases that help you generate lists of objects to observe). SkyTools falls squarely into the latter category. It does have elements of the other genres—it can do very attractive atlas charts or even draw you a picture of the entire sky—but it is really a mega database. Planners are not the type of software most amateurs gravitate to at first, but as they enter the "advanced" ranks, many begin to find planners more helpful than something that paints a pretty sky on the screen. Frankly, with more and more amateurs embracing goto technology there's less and less need for charts—computer-printed or otherwise. I'll often work through a list of dozens of objects without glancing at a chart all night long.

I think planners are the wave of the future in astronomy-ware, but I realize that people are reluctant to leave behind the beauties of Starry Night or The Sky for something they perceive as nothing more than a dull and dry Access database loaded up with the NGC objects. But most folks change their minds in a hurry once they get a load of what these programs can **do**. Don't believe it? I certainly don't have room here to list *all* of SkyTools' features, but here is a very abbreviated summary:

- Innovative graphics display, the "NightBar," shows the duration of darkness and object altitudes/observability.
- High-speed database engine.
- Order list objects by optimum viewing times.
- Display "current events"—important sky events for the evening.
- Takes your obstructed horizon into account when computing rise/set and optimum viewing times.
- Monthly events calendar.



- Over **1,000,000** deep sky objects included in the database.
- Hubble Guide Star Catalog.
- Access charts and object data directly from your observing lists.
- Print finder charts automatically customized for your telescope.
- Night vision (red) mode.
- Download user-developed observing lists from the Internet.
- Download new comet, asteroid and novae/supernovae data.
- Download star fields from the (huge) USNO star catalog if you need to go beyond the included GSC.
- Easy to use, fully-searchable observing logs.
- Generate photo-realistic star charts (or print "classic-style" maps).
- Bit-mapped stars can be used on charts.
- Star colors represent B-V colors.
- Smart labels eliminate overlap on charts.
- Rendered (pretty) planets.
- Telescope-binocular simulations create views representing your conditions and instruments.
- User can assign notes and images to objects.
- Fully customized printing for charts and lists.

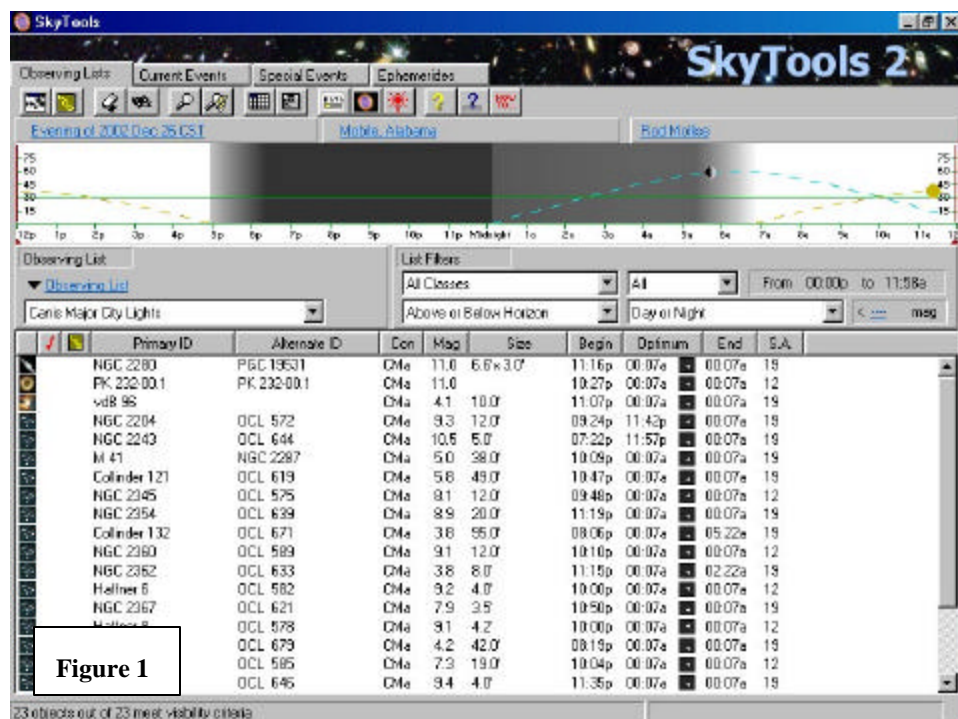
Geez, Louise! And, again, this is just a *small* sample of what ST2 can do. But the question is always: "**How well and simply does it do all this?**" It's easy to pile features on, but if the program is clunky--hard to navigate, slow and unstable--all the features in the world won't save it. The answer to the question is, "darned good." I was impressed from the moment I put the CD in the drive. One of the things astronomy-software program developers have neglected is *installation*. Often

you're merely told to copy files off a CD to a directory somewhere on your hard drive. Not SkyTools 2. The installation procedure is fully automated and very professional-looking. In just a few minutes, I had the program settled in on my antique 566mhz PC.

Once the program was running, I was presented with the display shown in **figure 1**. I was a little surprised. *Where the heck were the Windows menus?* You know, "file," "edit," etc., etc.? Was Greg Crinklaw gonna make me learn a new way of

click or two away. In just a few minutes I was able to make my way around ST2. Oh, I did have a little help: the program includes an excellent "help" system. Manual? Don't need no stinkin' manual. The program does not include the now de rigueur .pdf manual file common to must astro-software. And you don't miss it. Everything you need to know is accessible via Help, and this is much more usable really than an Acrobat file—or even a printed guide.

The opening screen, "Observing



doing things? **Aw for--!** I was...err..."miffed," yes. But I persevered, and it became evident that SkyTools doesn't have the familiar Win-menu bar because it doesn't *need* it.

Greg has been able to simplify and organize to the point where you just click on stuff you want to use or view. Menus appear if they are needed, then they get out of the way. Want to view the month's events calendar? Just click on the little calendar icon. Interested in data on an object? Click on the object. Need a chart? Again, just a

Lists," is your home base, and the place where you'll spend most of your time, but other screens, available via tabs, give you access to "Current Events," "Special Events," and "Ephemerides."

Below the tabs, you'll find an extensive icon-bar. This allows you to do things like search for objects to add to your lists, check-out an evening's sky events, configure the program and turn on the SkyTools' red night-vision mode. I like icons, and was happy to see that these icons are well-thought-out for the most part. Nothing's more frustrating

than trying to remember what a programmer is trying to represent with some odd-looking little picture.

After the icons, you come to a row of hypertext links. These take you to windows that allow you to select location, day/time and observer. Initially, I was a little puzzled by this feature. Why have a mixed metaphor--hypertext instead of just a few more icons on the bar? But

After the Nightbar come drop-down menus that allow you to select the observing list you want to work with (save as many as you like on your hard drive) and filter objects for display in the chosen list (by current visibility, magnitude and type). These commands are responsive and their functions are quite intuitive.

And then there's the meat. The

abbreviations for NGC objects (you know, Vb\*Cl, Ri., etc.). I know some folks don't like these abbreviations and find them annoying, but my opinion is that they present a lot of data in a very compact format. I miss 'em in SkyTools.

Right-clicking on an object brings up a sub-menu that allows you, among other things, to produce a chart. Just about every planner does *some* charting. But usually the maps seem like an afterthought. I didn't get this feeling at all with SkyTools 2. Not only is the Interactive Atlas, in its "realistic" mode, beautiful to look at; it really *is* "interactive." Being able to click anywhere on a chart and center on this position, for example, is something new to planner software, whose maps tend to the very static. And it is very welcome. I can actually *work* with SkyTools' charts instead of just *look* at them. What really knocks peoples' socks off, though? **SkyTools' nebulae** (see figure 2). Not boxes. Not outlines. Lovely hydrogen red clouds painted on the sky. Fill that sky with colored, bit-mapped stars and you'll know why folks are finally talking about a planner-program's star charts!

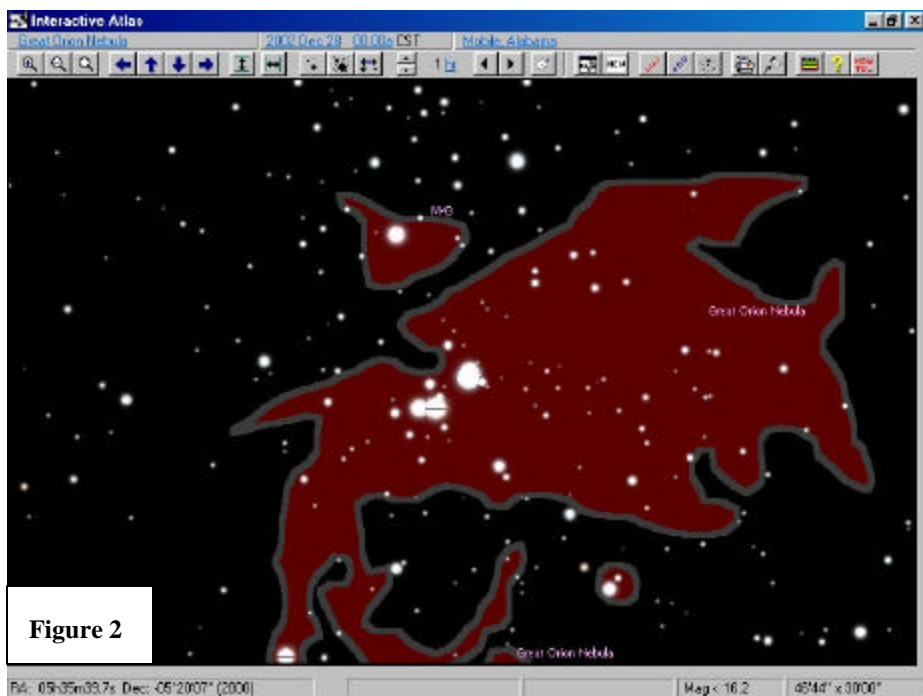


Figure 2

this actually works well, since the hypertext for location actually tells you the current location—same for day/time and observer.

Next up onscreen is what Mr. Crinklaw calls the "NightBar." This is a graph that displays altitude along its Y axis and time along its X axis. A look at this instantly shows when twilight begins and ends, when the Moon rises/sets, and when your object of interest (selected from your list) is best placed for observing. A graph of this type is a splendid idea that has appeared in a few other astronomy programs over the years (most notably David Chandler's Deep Space), but in a much less attractive and less fully-realized form. If there's one SkyTools feature that people really love and comment on, it's this NightBar.

actual observing list. It's attractive and easy to read (a good thing, given my middle-aged eyes). But what's the *best* thing about it? The little icons. In another small touch that at first seems like a throwaway, Greg places a small icon at the beginning of each object's row to represent its type—a little spindle shape for a galaxy, a teeny fuzz-ball for a globular, etc. Doesn't seem like a big deal at first, but, at 3 am out in the field, it's a feature that I really appreciate. No hunting for abbreviations or guessing as to what NGC Umptysquat is. Each object in the list is accompanied by the usual data—position, magnitude, etc. If this isn't enough, clicking on an entry brings up a data window with further details. One surprising omission is the Dreyer

But before you can develop lists and charts of objects for the evening's observing you've got to pull 'em out of the program's gigantic database. With over a million objects, search facilities *must* be good, and I mean *good*. Luckily, SkyTools 2 is up to the task. It provides two methods of finding objects to place in your lists. The first method is the quick and dirty one: "Designation Search." Clicking the little magnifying glass icon in the toolbar brings up this window. In it, you can type in object names or numbers and retrieve DSOs on the fly. Typing "M 8" or "Lagoon" or "Lagoon Nebula," for example, brings up a list of candidate objects, one of which is the famous nebula. This works well for the most part—though I was annoyed that the program *required*

me to type "M <space> 8". It resolutely refused to accept "M8."

Designation search is OK if you just want to add an object or two to an already-existing list. But when you want lots of NGC galaxies in Virgo you obviously need a more capable retrieval engine. Hit the icon next over from the magnifying glass

"New" button. The only thing I didn't like here was the method of specifying magnitude ranges for the search: "Magnitude \$X #Y" where "X" and "Y" are values you enter (or can leave blank). I found this confusing, especially late at night, but finally figured out that specifying "Magnitude \$ <blank> #10" would,

What *didn't* I like? Not much. Other than the few nits mentioned above, most of my complaints are more in the order of wish-list stuff to make the program *better* rather than major deficiencies. One thing that I think this—or any other planner—cries out for is PICTURES. It's one thing to read a description or look at a plotted chart.

And it's *quite another* to see an actual photograph of the area of interest. Sometimes, seeing a real picture makes object location and identification MUCH easier. I'd really like to see ST2 at least include thumbnails for all the NGC objects. Another thing that's missing that's really a must these days is **telescope control** for goto scopes. Apparently the author thinks so too, as the program's website mentions that scope control is "coming in 2003."

Actually I'm a little bit **snitified** that I can't find *more* to criticize. I mean, this is a big, sprawling program that sure claims to do a lot. Can it be *that* good. Yep. I must admit that it can. My hard drive is full of astro-software, but I could easily wipe it all and survive with just SkyTools2. Easily. It *is* that good. Just go to <http://www.skyhound.com> and ORDER it! 99 measly bucks gets you...OK...I'll say it: *one of the best programs—if not THE best program—in the astronomy biz right now.* Period.



## Seeking the Edge of the Solar System

In September and August, respectively, 2002, the Voyager 1 and 2 spacecraft observed their 25th anniversaries in space, continuing to perform long after their original mission to visit the Jupiter and Saturn systems. After Voyager 1's encounter with the two gas giants, it was aimed upward out of the plane of the ecliptic. Voyager 2, after its visit at Jupiter and Saturn,

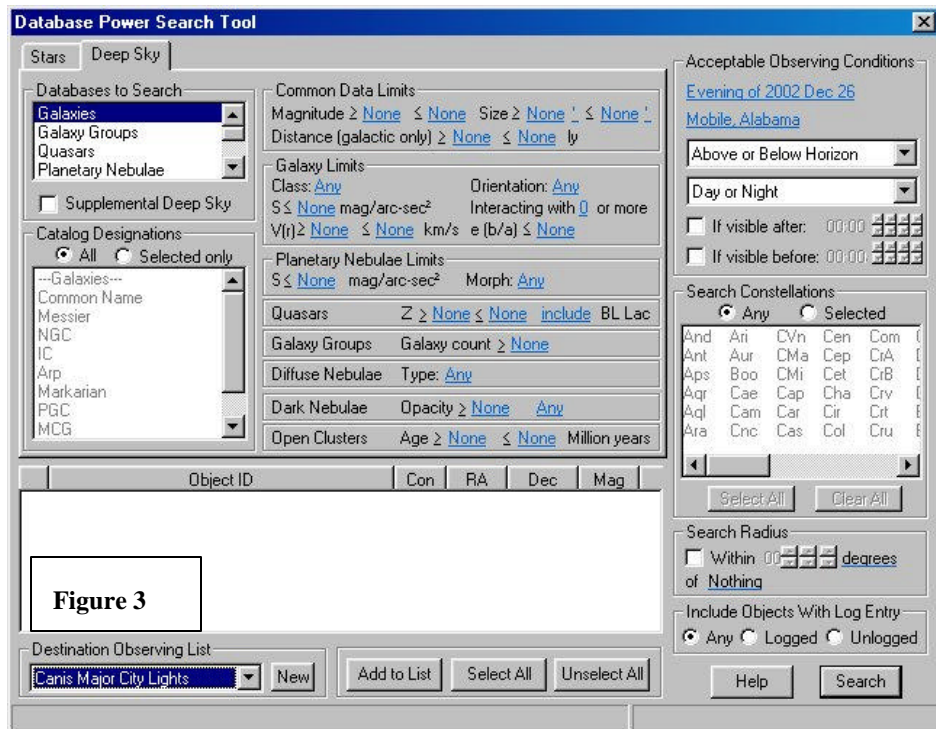


Figure 3

(looks like a magnifying glass beside a lightning bolt (I think)) and you get the somewhat scary looking screen shown in **Figure 3** "Power Search." This window isn't so bad once you get used to it. It *has* to look a little busy, since it's called on to do a lot.

Using its tools, you can specify exactly which objects to retrieve based on type, catalog, magnitude, constellation and more. Once the objects are retrieved from the databases, they are displayed in a window and you can then select which to include in the final observing list. One nice feature is the ability to send these objects to any list, not just the one displayed on the Observing Lists screen at the moment. This is also the place where you'll start a new list via a

for example, search for objects of magnitude 10 and brighter. I'm comfortable with this system now, but I still think it's a little less than obvious—to me, anyway.

In the end, how did I like SkyTools2? I liked it! I liked it! I've been using it for most of my planning tasks since the day I received it. It works well. It never has acted funky, never hung up my machine. It's fast on my hardly state-of-the-art computer. In fact, its minimum system requirements are surprisingly modest: 100mhz processor, Windows 95 and 12mb of hard disk space (in addition to a CDROM drive, natch). It ran so snappily on my 566 machine that I have no doubt that it will do quite well on older, slower "observatory computers."



was given two more planetary destinations, Uranus and Neptune. It completed its "grand tour" of the outer planets in 1989. It was then aimed downward out of the ecliptic plane.

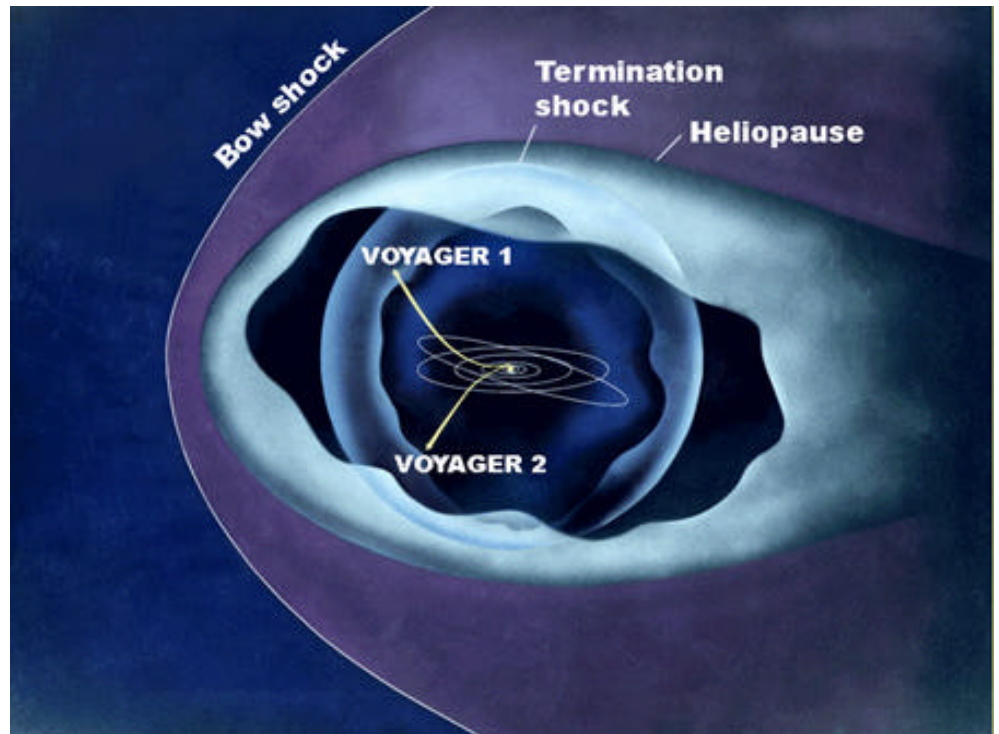
Now, at about 85 AU, Voyager 1 is the most distant human-made object. Round-trip light time is 24 hours. Voyager 2 is at about 68 AU. Their mission now is to study the heliosphere, the vast bubble of space within the Sun's influence, and the heliopause, the boundary of the solar system with interstellar space. At the heliopause, the outward pressure exerted by the solar wind balances the inward pressure of the interstellar wind. The region where solar wind particles begin piling up against the heliopause is the termination shock, where the solar wind should drop from about 1,500,000 kilometers (nearly 1,000,000 miles) per hour to 400,000 kilometers (250,000 miles) per hour. Voyager 1 is already detecting a slowing of the solar wind from the pressure of inbound interstellar particles leaking through the heliopause.

No one knows exactly how much farther Voyager 1 must travel to reach the termination shock or the heliopause. Dr. Ed Stone, Voyager Project Scientist since mission inception, estimates that the spacecraft could reach the termination shock within three years. Once there, Dr. Stone predicts it will still have about 5 billion to 8 billion kilometers (3 billion to 5 billion miles) and 10 to 15 years to go before actually crossing the heliopause into interstellar space. Because the heliosphere expands and contracts with the level of solar activity and the inward pressure of the interstellar wind is uncertain, it is very difficult for scientists to estimate the actual extent of the heliosphere.

Read more about the Voyager mission to find the heliopause at <http://voyager.jpl.nasa.gov/>. For

children, go to [http://spaceplace.nasa.gov/vgr\\_fact1.htm](http://spaceplace.nasa.gov/vgr_fact1.htm) to read about the Voyagers' grand tour of the outer planets and find out the secret code they use to send pictures back from space.

***This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.***



### Caption:

*Voyagers 1 and 2 are headed out of the solar system in search of the heliopause, the region where the Sun's wind stops and interstellar space begins.*

# My Back Pages

"Crimson flames tied through my ears  
Rollin' high and mighty traps  
Pounced with fire on flaming roads  
Using ideas as my maps  
"We'll meet on edges, soon," said I  
Proud 'neath heated brow.  
Ah, but I was so much older then,  
I'm younger than that now."



## Club Notes

### Mobile Astronomical Society (MAS)

#### Minutes of December 2002 Mobile Astronomical Society Meeting

The December meeting of the MAS was called to order at 7:15pm on Thursday, December 5 by President George Byron.

Officers present were Treasurer Greg Thompson and Secretary Rod Mollise.

Minutes of the November meeting were read by Secretary Rod Mollise. The minutes were accepted with one emendation.

The first order of business was the annual January holiday dinner. George reported that he has been able to reserve space for us at the Original Oyster House on the Causeway. The Oyster House stated that they'd need a guarantee of 50 people in order to reserve a room for the club, but that there would be no problem providing us with tables, etc. The dinner will be held on Thursday, 9 January.

The next item of business was the question of elections for club officers. Due to the

relatively small active membership at this time, George floated the idea of continuing the current slate of officers for another year if the membership concurred. A motion was made by Judy Anderson to continue the current slate. This was seconded, and the motion passed on a voice vote. The current officers, George Byron (President), Greg Thompson (Treasurer/ALCOR) and Rod Mollise (Secretary) will continue to serve through 2003.

A related discussion was the matter of the club Vice President. The current Vice President has recently become inactive. Judy Anderson volunteered to call this person and see if he wants to resign. If so, we will hold a special election for Vice President as required.

Judy reminded the membership that the Winter Star Party is coming up on February 3 - 9. Admission is by lottery only.

Pat Rochford volunteered to present a program at the February meeting.

Following the conclusion of the business meeting, Rod Mollise gave a presentation on the powerful freeware astronomy programs Cartes du Ciel and Virtual Moon atlas. Rod used the ESC's LCD projector to guide the membership through a tour of these feature-filled computer programs.

## Skywatch

President George adjourned the meeting at 8:45pm. Due to clouds, no observing session was possible after the meeting.

YIIIIEEEEK! BEAVIS IN A NEW-YEAR-BABY DIAPER...I DID NOT NEED TO SEE THAT! Blackness. I passed out! I only revived when a hermetically sealed mayo jar (Kept on Funk and Wagnal's Back Porch for a Fortnight) impacted my noggin. That old, familiar mayo jar bearing many delicious...

# RUMOURS

**Big news this time?** Celestron is coming out with ANOTHER line of goto SCTs. The new ones are called the "CGEs," and are 8, 11 and 14 inch OTAs mounted on a new GEM mount, the CGE. This GEM is based on the earlier CI700 design, but, in addition to an improved tripod, improved gear system, much better clutches and an adjustable tripod, the new scopes include a NexStar computer to provide automatic pointing and other high-tech features (a GPS receiver is optional). Celestron: how do I get me a 14 for an...errrr..."extended evaluation trial?!" Celestron, by the way, was *highly* miffed when a hacker got into their LAN and made off with a copy of the .pdf format advertisement for these new telescopes before (they say) they were ready to release it. As you can imagine, the ad was all over the 'Net in minutes.

**Seen the new Celestron ads** in the Astro mags, bubba? Celestron has definitely taken the gloves off after having imitated a punching bag for the last 10 years or so. Right there in big letters: "A telescope that combines the design features, engineering performance, and value of the Nexstar 11 GPS doesn't come out of the BLUE."(!)

**Course, massive retaliation is fair play** in the deadly-serious SCT wars. I'm told Meade is hitting back in its ads for the February magazines.

**The RULER in the land of Chinese scopes is the Mainland's Synta**, right? Purty much. But apparently also-ran Guan Sheng Optical of Taiwan ain't ready to throw in the towel just yet (GS did the popular Skyview Deluxe mount Orion sold

for quite a few years). One of the Anonymous One's buddies reports that a Guan Sheng manager has been posting to the "Skyquest" mailing list. Said management person says that GS is preparing to release a 12 inch f/5 dob in the 1000 US\$ price range with, sez Mr. Manager, mirrors figured to 1/6 wave. Hmmm...

**In the wacky doings department...** Prior to the recent total Solar eclipse, the Australian government became concerned about people damaging their eyesight by looking at the Sun. So what did they do? They attempted to outlaw Solar filters—including solar glasses and telescope filters. I'm sure they had the best intentions. They should have REGULATED/APPROVED safe solar filter material rather than try to outlaw it. Ah, the joys of Big Government. I'm sure all this action did was ENCOURAGE people to view the Sun with dangerous filters—pop-tart wrappers and fogged photo film. Sheesh!

And with that, the Anonymous One's off to ease his New-Year-Aching-Head!

--The Anonymous Astronomer

