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Questar 3.5" Standard Model

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I wish to thank the fine folks at Astronomics for lending me this Questar and Tri-stand for over 3 months. Never once did they ask for anything in return other than writing something about the Questar line of telescopes. It's unfortunate that so little has been written about it anywhere on the web and the folks at Astronomics felt this should be rectified. It should be mentioned that Astronomics is one of a good number of Questar dealers. Consequently, it doesn't really benefit in any substantial way from an article. To me this shows they have heart and a sense of commitment to the amateur community. Thanks Astronomics!

Introduction

It seems every amateur astronomer over 30 years of age has wanted to own a Questar at one time or another. This is not surprising as Questar has spent the past 50 years running the best advertisements that amateur astronomy has ever seen. Reading the old Questar ads is like reading an ad for a Lexus, Rolex or other high-dollar luxury item. While some telescope companies use scientific terms and others pure

marketing hype, the Questar ad purrs at you like a kitten and uses such terms as "heirloom quality", "handsome cubic foot of luggage", "velvet smooth controls", and "brushed chrome knobs".

However, behind these gold-lined ads is a very real product, one few people have ever been disappointed in. While the Questar is beautiful enough to reside in the most plush of studies, it's also packed with features that put other telescopes to shame. If you're curious, read on and evaluate for yourself.

Questar - a company with history

Questar is a privately-owned business that has been making the Questar line of telescopes since 1952. Located in New Hope, PA, they are the only telescope company to publish the following amazing invitation;

We invite you to inspect a Questar at our offices in New Hope, where you are always welcome.

Someday I hope to take them up on their offer for no other reason than to thank them for offering it. Other telescope companies put up walls and have no real means for the amateur community to interact with them. Questar appears to be a far different company, one that doesn't mind letting customers into its offices and getting to know their people. I find this admirable.

One of the unusual things about the old Questar ads is the fact that the old Questars look virtually identical to the most recent Questars. It's amazing to me that in a world of upgrades, new versions and the constant tweaking of products, that Questar got this telescope right 50 years ago. Other than a few small amenities, you would have a hard time distinguishing the first Questars from the ones that roll out their doors today.

Product Lines

Most amateur astronomers will recognize the name Questar and associate it with the Questar 3.5" astronomical telescope. However, the Questar Corporation has a product line that encompasses a number of different but sophisticated instruments. Questar categorizes these instruments into four product lines;

1. Astronomical Telescopes (3.5", 7" and custom order 12" telescopes)
2. Nature Instruments (Birder versions of the astronomical telescopes)
3. Science Instruments (Long distance microscopes, remote measurement systems)
4. Surveillance Instruments

While perusing their product lines I was struck by the fact that virtually all the instruments use one of the optical tubes as the heart of the instrument. Questar states that they merge cutting edge electronics with the tried and true Questar optical tubes to produce the Science and Surveillance product lines. It's startling to look on their web site under the Surveillance and Science sections and see complex looking

instruments with unfathomable uses but a friendly 3.5" Questar tube peeking out at you. Anyone need a multi focal length, with standard parfocusing, microprocessor controlled Maksutov-cassegrain optical surveillance system . . ?

Most likely you're wondering why I cover their "other" product lines here in an astronomical telescope review. The reason is simple - to give some context to the rumors that Questar may be producing a GOTO telescope. Prior to doing the research for this review, I heard from several people who commented that the Questar Corporation doesn't have the experience necessary to produce a GOTO version of the Questar telescope. The sage wisdom goes that Questar makes fine optics but doesn't "do" electronics. As can be easily seen from their web site, they do.

Additionally, I wanted to drop a word of warning about used Questar sales. Over the years Questar has made optical tubes for a number of specialized or custom applications. From all appearances, the Questar tubes look like the astronomical version, but the optical design may be different. From time to time I see these forlorn instruments for sale on the used market for what appears to be a substantial savings over new. The ad always has a disclaimer that the seller doesn't know what it was originally used for but someone could "adapt it for astronomical uses". Beware such sales unless you have a money back guarantee and an agreed upon inspection period. Most likely the instrument will not make a satisfactory telescope, as it was never designed for such an application.

Astronomical Telescope Line

The Questar Astronomical telescope line consists of 3 sizes of telescopes and choices of mirror substrate, coatings and accessories. Here is a simple break down to ease you into the world of Questar telescopes:

3.5" Questar

1. **Field Model:** The most basic Questar optical tube that is designed for spotting scope/telephoto applications. It comes as a simple optical tube with a 1/4-20 adapter hole on the bottom
2. **Birder:** An upgraded field model with a high power finder and a rapid focus focuser. Like the field model it is the optical tube with a 1/4-20 adapter hole
3. **Standard Model:** This is the Questar model we astronomers have all seen in the Questar ads. Here the optical tube (which is silk screened with the constellations) rides in a beautiful fork mount with a chrome base and dew shield. I'll cover the details in the next section
4. **Duplex Model:** Basically, this is the standard model from above but has the nifty ability to remove the optical tube from its fork mount and mount it on something else. Intended for folks who straddle the birding/astronomical line.
5. **50th Anniversary Model:** The ultimate 3.5" model! A standard model with quartz mirror, guaranteed 1/10th wave optics, a mirrored optical cap, engraved constellations, leather carry case and a full-axis solar filter. A limited 250 run of these were made in 2000 and can still be purchased as of this writing (June, 2001). A Questar collector's dream scope.

7" Questar

Far less known and rarely seen anywhere except star parties, the Questar 7 is the stuff astronomical legends are made of. It's basically a scaled-up version of the 3.5" optical tube that can be mounted on any EQ mount that can carry the 18-lb weight.

1. **Classical Version:** A larger version of the 3.5" tube and control box that is meant to be mounted on the 7" Questar fork arm assembly.
2. **Astro Version:** The 7" OTA without the control box. This probably strikes you as odd that the astronomical version doesn't come with the control box.. However, the problem lies with the finder. I'll go into this later, but the mirror finder rides beneath the Classical and 3.5" version and will not work on an EQ mount. One would simply have a finder view of the head of the tripod.

12" Questar

Rumor has it that only 16 12" Questars were ever made for astronomical purposes. No longer made but highly sought after on the used market.

Options and Accessories

Choosing which Questar model is merely the first step. Next you will have to decide on the mirror substrate and coatings. Here is the break down:

Mirror substrates:

1. **Pyrex:** The standard mirror substrate.
2. **Zerodur:** A glass ceramic substrate that is a good deal more expensive than the pyrex. Why pay extra? Well, during the period when the mirror is cooling, zerodur keeps its figure better (minute expansion/contraction due to thermal instability). This translates into better images during this thermally unstable phase. Once cooled both types of mirrors perform identically.

Coatings:

1. **Magnesium Fluoride:** This is the standard coating package. Magnesium fluoride is applied to both sides of the corrector plate. The primary and secondary mirrors receive aluminum reflective coatings.
2. **Broad-Band:** An optional coating package that Questar claims increases the total transmission an additional 20%. Enhanced protected silver film coating on both mirrors and a highly efficient anti-reflection coating applied to both surfaces of the corrector.



Solar Filters

1. **Off-axis glass solar filter:** The standard 3.5" model comes with a 1.5" off axis glass solar filter that is pictured above. This finely-machined (and what on the Questar isn't?) solar filter threads onto the front of the Questar optical tube and instantly gives you a solar observatory. It gives sharp solar views with nicely outlined umbra and penumbra on the solar surface. However it has the terrible drawback of being dim - I mean really dim. A 1.5" off-axis solar filter is really undersized for solar observing and this translates into a very dim image.
2. **Full-axis glass solar filter:** Questar also sells a full aperture glass solar filter that also threads onto the front of the optical tube. While I haven't used it, I will probably buy one the instant I purchase my first Questar. The Questar is the perfect little "take-along" solar observatory and I will want to maximize this area of use as much as possible. Did I mention the off-axis solar filter is dim?



Meet the Questar 3.5" Standard

Astronomics sent me a used Questar 3.5" standard with pyrex mirror and broad-band coatings. It came with 2 Brandon eyepieces (12mm & 16mm), an off-axis solar filter, the Powerguide II drive and the tabletop legs. All this fits in the splendid transport case you see in the photo below.

This picture encapsulates part of the Questar appeal - a complete telescope in a portable package the size of a large purse. Experienced observers know that easily setup and transportable telescopes get used more often than those instruments that are not. I can attest to this personally as I took the Questar on trips where there might have been a possibility of observing (either solar or nighttime). I found there simply wasn't any reason not to take the Questar on trips and in doing so increased the number of observing sessions that I had.

Examining the photo you see the Questar sitting snugly in its case. To the upper left of the Questar is a small velvet pocket for the Powerguide II hand controller and cord. In the door of the case are the 3 tabletop legs, 2 pockets for eyepieces, the glass solar filter and an extra pocket for a tool, flashlight, etc.

Since the Questar has a built-in barlow, 2 eyepieces are actually a collection of 4 focal lengths. No longer do you have to carry along a separate case with eyepieces. With the Questar 3.5" you have a complete set and a single case to carry.

The optical tube rides in a dual-drive capable fork arm assembly. The standard Questar comes with a single RA drive but you can purchase the optional DEC drive separately. Manual slow motion controls are integrated into the fork assembly by polished chrome knobs. These slow motion controls are the smoothest of any telescope I have ever owned. At times I didn't even turn on the RA drive while observing the moon due to the incredible smoothness of the controls. There was not a hint of quiver in the eyepiece when I tracked manually. Such details are another piece of the Questar appeal.

Examining the back of the Questar we see what is termed the "control box". This rather confusing description encompasses the 2 levers (barlow and finder), the focusing knob, the eyepiece diopter corrector and the mirror finder on the rear of the OTA. Let's take this one at a time.



Finder - what a neat idea

The finder assembly on the Questar is a brilliant design that had me shaking my head in amazement when I first used it. Here's how it works. The "finder" consists of a simple mirror on the bottom of the OTA. By flicking the finder lever (far right on back of OTA) the view through the eyepiece switches from the OTA to the mirror. Depending upon which eyepiece you are looking through determines the FOV of the finder view. The table below shows the stats as published by Questar.

Eyepiece	AFOV	Finder Power	Finder FOV
32mm Brandon	45-deg	3x	14-deg
24mm Brandon	45-deg	4x	12-deg
16mm Brandon	45-deg	6x	10-deg
12mm Brandon	45-deg	8x	8-deg
8mm Brandon	45-deg	12x	6-deg

What this means is you NEVER have to move your eye from the eyepiece when switching to the finder or from the finder to the magnified view through the OTA. In practice this is my favorite Questar feature in a scope packed with features. This simple idea increased my comfort level while observing twofold. No longer did I have to crane my neck or get down on my knees to sight through a finder.

For you solar observers, the finder has a built-in solar filter. Simply flip a small lever on the side of the finder mirror and the solar filter snaps into place, Flip the switch back and the finder solar filter snaps out of the finder light path.

There is one drawback to the finder design - coming to focus with eyepieces other than a Brandon. The upper collar of the eyepiece holder on the Questar turns to allow you to adjust the finder focus to meet your specific needs. This is a standard diopter adjustment just like you have on any reasonable pair of binoculars. The problem is that the diopter range is small and designed to work within the focus range of the Brandon eyepieces. If you want to use other eyepieces, chances are these eyepieces won't come to focus with the finder. In my case, none of my eyepieces other than my old Tele Vue 21mm plossel came to focus with the finder.

Barlow on tap

If the finder comfort isn't enough, how about a built-in high quality barlow? That's right, simply flip the lever on the left side of the control box and a 1.6x Questar barlow slides into the light-path. This barlow is optically matched to the Brandon eyepieces much like the Takahashi Extender-Q is matched to the optics of the Takahashi telescopes.

Once again, in practice I found the built-in barlow to increase my comfort and be a real time saver. On a typical telescope, when not using my Leica zoom, I have to exchange eyepieces to find which gives the best views. This consumes time as I have to rummage around and swap eyepieces back and forth. With the 1.6 barlow and 2 Brandon eyepieces, I avoid this entire problem and simply rotate between 2 eyepieces while flicking the barlow lever. What could be easier?

The Focuser

The small knob on the bottom is the focusing knob. Like its optical cousin, the schmidt-cassegrains, the Questar achieves focus by moving the primary mirror forward and backwards. The focusing knob on my

sample must have been slightly bent in shipping as there is the slightest hint of a quiver when you focus. In eyeballing along the axis of the focusing knob I could just barely tell that it was not forming a straight line. Consequently, when focusing at high powers, there is a small jar or quiver at a certain point.

However, even with the slightly bent focusing knob, focusing was very smooth and precise. The knob itself is a bit on the small side. A larger knob would be helpful as one must use ones finger and thumb to gently reach focus. I can only guess that using gloves on such a small knob would take a bit of care. I only used mine in warm weather so I can't attest to this firsthand.



The Dew Shield and More

If you think you've seen all the features that Questar could pack into this little scope - you would be

quite wrong. As you can see in the picture above, the dew shield contains all the constellations and 300 individual stars. Simply turn the dew shield to the current month and date and you have a map of the heavens. Each square represents 1 hour and all you have to do is turn the dew shield each hour to keep the proper constellations in view.

The actual OTA has a map of the Moon silk screened on it. This is the classical moon map and is inverted as seen with an eyepiece. Craters, mare, mountains are all labeled and easily found.

What this means is you not only don't have to bring more than 2 eyepieces (due to the built-in barlow) but you can also forget your star atlas and lunar map.



Rotating Tube

One of the most frustrating problems with a fork-arm mounted telescope is the eyepiece can be at

uncomfortable positions in certain areas of the sky. Point a fork-mount OTA either directly overhead or anywhere near the pole and the eyepiece will be in an awkward position. While the engineers at Questar couldn't overcome this limitation, they did ease the pain of it by designing the OTA to rotate within the base. In the pictures above I've rotated the tube from the far left to the far right. In any position, if you find the eyepiece to be in an uncomfortable position, you simply rotate the tube. In use, this makes the Questar more comfortable to use and increases the useful swath of sky you can observe.

However, as I'll go into detail later, the single fork arm of the C5+ overcomes this problem better. Dual fork arms have certain limitations and you should be aware of them before buying a Questar or other dual fork armed telescopes.



The Questar Tri-Stand

The Questar base has a standard 1/4-20 hole. One can attach it to any heavy-duty photo tripod or other tripod with the appropriate adapter. For the Questar owner who wants nothing but the best, Questar has the Tri-Stand (pictured above). This marvelous but expensive stand (\$1000) is a beautifully machined and well thought out complement to the Questar. The Tri-Stand is all machined and anodized metal and reminds me greatly of the Losmandy G11. As you can imagine, such a substantial mount translates into an extremely stable platform for a 3.5" telescope. Never did it quiver or budge during the entire 2 months I used it.

With the flip of the lever, the legs fold upward for easy transport and storage. The ring around the middle piece has holes in it to hold your eyepieces and accessories. A carrying handle on the side eases the burden of lifting the entire package and moving it around your yard.

The really neat part of this stand is the pie shaped head to which the Questar base attaches. This piece actually moves up (forward) and down (back) by turning a machined knob on the other side of the base. This is how you adjust the telescope to the latitude you will be observing from. An added benefit of this is that the balance point of the telescope never changes.

Is the Tri-Stand overkill? Yes, a far lesser stand would be quite adequate and I suspect that not many Questar owners have the Tri-Stand. However, whenever I can afford a Questar, I'll probably buy the Tri-Stand as the whole ensemble has a certain panache.

Part II (under the night sky)

Several months have passed since I shipped the borrowed Questar back to the good folks at Astronomics. At the time I had the best intentions to sit down and write Part II of this review. However, life became busy and I found it harder and harder to sit down and write as memories of the observing sessions became fainter. After receiving a dozen emails inquiring about Part II, I decided faint memories or not, it was time to pen the conclusion.

Optics - the heart of the matter to many people

During my several months of use, I could find nothing wrong with the optics of the Questar other than the slight shimmy in the focuser due to the bent focuser shaft. Night after night and target after target the Questar reliably gave me the best views a small, obstructed instrument could give. I never found myself puzzling over a flared star, a smeared planet or errors in tracking. It simply gave wonderful views, with reliable and well thought out mechanicals.

It's my experience, that well designed and executed telescopes are rather difficult to write about. When they work flawlessly, one gets lost in the views and not with fiddling with the scope. Consequently, many observing sessions were simply that - observing sessions. As pitiful an excuse as it may sound, I

spent my sessions observing and not taking notes or working out problems. It didn't take many sessions to conclude that one day I would own my own Questar, regardless of the price.

What follows is my skimpy notes and memories of observing with the Questar on three types of objects; lunar, planetary and deep sky.

Lunar Observing (my favorite)

Lunar observing is one of my favorite types of observing sessions. Leading a hectic life with family, jobs, etc, I rarely have the chance to plan out my observing sessions. Like so many amateurs I speak with, the skies clear, the family is content and I run outside to observe what I can for the next hour or so. Poor weather patterns, murky skies and light pollution limit my deep sky observing. However, none of this affects the moon, and like a faithful friend, if around it doesn't disappoint.

I found the maximum magnification on the moon to be right at 280x (80x/inch). This is an astounding number given it exceeds the 50x/inch threshold that I have long found to be the ceiling for most high quality instruments. Beyond such a threshold the image ceases to show any more detail but simply enlarges and softens. With the Questar it continued to show detail and only softened once I pushed it past 300x.

To put this into perspective, the ETX-90 I owned the year before hit the wall at 200x (57x/inch) on lunar observing. My C5+ has a maximum magnification of 280x (55x/inch) in direct comparison with the Questar on the same nights. However, even though the C5+ and Questar have the same upper threshold while observing the moon, the image at the eyepiece was different in two ways, contrast and off-axis performance.

The contrast of the Questar is significantly better than the C5+. Edge of the moon in the Questar has a definite stop or delineation line while in the C5+ there is a less definite and just slightly fuzzy line. I found this phenomenon to repeat itself whenever a strong area of contrast was present in the eyepiece. Edge of craters, shadows, and the feet of mountain ranges all showed this effect. The overall affect in the C5+ was a modestly muted view. The best analogy I can use for this is to think of two computer pictures, one drawn using a palette of 56 shades of gray, the other by using 256 shades of gray. At first glance both show the same detail but upon studied examination, the 56-grayscale picture is slightly smearing features in areas of graduation.

It's my belief that the superb contrast of the Questar (and other highly corrected Maksutov-Cassegrains) is the reason people use the term "refractor-like" in their descriptions. However, such a term is unfair to highly corrector apochromatic refractors as the central obstruction of the Questar does bleed low-contrast details. This became apparent to me when I viewed the detail in the ejecta blankets of craters. An apo can see additional low-contrast details that will elude the Questar. To return to my grayscale picture analogy, the apo picture would have 400 shades of gray to paint the picture with. However, in this comparison you need to look in specific areas (low-contrast detail areas) to note the differences. Also note that not all "apochromatic" refractors are the same. Just as the Questar excels in the execution of the Maksutov-Cassegrain design (actually, one design type), not all apochromatic refractors excel in

theirs. Consequently, be careful in any generalized 1:1 statements. It is not so much the telescope type, nor the design, but how well the execution of the design was accomplished.

The second notable between the Questar and C5+ is in off-axis performance. The Questar shows a very flat field with no noticeable off-axis degradation on the moon. In focus images in the center of the field are just as sharp as images 75% off axis. The same cannot be said of the C5+. Images at the center of FOV are sharp, but show degradation at the 75% mark. In viewing both images but not looking for any specific, I found myself preferring the views through the smaller aperture Questar.

I described the built in barlow earlier and commented on what an asset it is for a smooth observing session. I found the Questar built in barlow to be a wonderful addition for lunar observing. Being able to zoom in and out on lunar features at the flick of a switch brought my lunar observing to a whole new level. In no other type of observing am I quickly switching between powers to determine which magnification shows the best image for the feature viewed. Since I may switch between a half dozen lunar features during a session, the built-in barlow is a time saver by giving me more time observing then swapping eyepieces around. In my busy life, this is a feature I appreciate.

Planetary Observing

During the first 2 weeks of using the Questar, Jupiter was roughly 25 degrees above the horizon while setting in the evenings. I was at the extreme tail end of planetary observing this season but did what I could to catch some views before it sank too low. Each evening it was clear I would rush outside while still light, point the Questar towards the west and find Jupiter. It was fun being able to view Jupiter while still light out and several neighbors walking by got their first glimpse of Jupiter through the Questar. Every one of them commented on what a beautiful looking instrument the Questar is.

Viewing any object this low in the sky is an unfair test of a telescopes performance. Since one is looking through more of the Earth's atmosphere, views are much worse then if one is looking at the zenith. Most folks would not even point their telescope at Jupiter when it's this low in the sky. Larger instruments (I know I've done this) show poor images at any magnification due to the atmospheric distortions.

It is in this situation that smaller aperture instruments have the advantage. Smaller aperture instruments are less sensitive to atmospheric turbulence due to the smaller swatch of sky their optics are "punching" a hole through. So while a larger aperture scope would give poor views so low to the horizon, the Questar (and other small, quality instruments) will give reasonable images or the best images possible under the circumstances.

Here the Questar didn't let me down. While not giving views up to it's full planetary potential, it did allow me to have some nice views so late in the season. 5 bands on Jupiter were crisply defined with some detail available after extended study using 185x. Higher magnifications gave me a larger image but did not show any further details and the crispness softened quickly. That I was able to use 185x so low in the sky without losing detail on Jupiter surprised and pleased me greatly.

On very nice feature of the images was how hard and contrasty the edge of the planet and the space

around it is. One reason I can't stand secondary color in achromatic refractors is this aspect of planetary viewing is ruined. An achromat will show a green or purple "halo" around bright objects. For many people this is not objectionable as they are studying detail within the planets disk itself. However, over time this secondary color ruins the gestalt of the planetary image for me. The beauty of Jupiter, framed against the blackness of space, with its four brightest moons sparkling around it is a sight I enjoy greatly.

General Deep Sky Observing

Deep sky observing is not the forte of either the Questar or any other small aperture telescope. This statement is obviously an opinion but one I've formed over a good number of years using various sized instruments. On this subject I will come quickly to the point, if your observational preferences are for deep sky objects, then additional aperture is what you seek. No matter how fine the optics, nothing makes up for aperture for general deep sky observing. It's important to get this concept out of the way early on so I can discuss what the Questar IS capable of.

For deep sky observing, get yourself a 32mm 53-deg FOV plossel to maximize your lowest power field of view. The 24mm 45-deg Brandon that comes with the Questar is a fine eyepiece but as the chart below shows, the 32mm 52-deg plossel increases your fov significantly

Eyepiece	Eyepiece FOV	Magnification	Fov in the Questar
24mm Brandon	45-deg	54x	.83-deg
32mm plossel	52-deg	40x	1.3-deg

Over the years I've found 1-deg FOV to be the minimum for hunting deep sky objects with detailed star maps. Typically, beginners find such a fov restrictive and unworkable, as they haven't learned star hopping skills or how to read a detailed star atlas. Consequently, some folks feel that anything below 2-deg fov is unworkable. You need to judge for yourself whether you can work with the Questar's low power fov.

Keeping with this line of thought, if you live and observe in a light polluted area, rich field observing is difficult if not impossible to do. In such areas one needs to increase the magnification to the point where the background sky darkens enough to overcome the sky glow. My area has a good deal of light pollution to the south and east and I've long become used to using higher than typical powers to locate deep sky objects with any instrument.

Globular clusters

I was unable to resolve any globular clusters I observed during the time I had the Questar. While most globulars were reasonably easy to find, the 3.5" Questar lacks the aperture to resolve them. Globulars appeared as dense smudges of gray area and increasing the magnification simply made the smudge bigger with some graininess quality. I find that 8" of aperture is needed to do justice to globular clusters

with 12" being a definite "wowser".

Open Clusters

With open clusters I spent my observing time puzzling out the shapes of many of them. A good number of open clusters have earned nicknames due to the shape their stars form. Easy ones include the "owl cluster" in Cassiopeia and the "Wild duck" cluster in Aquila. The Questar did a fine job of framing these clusters and partially resolving them depending upon how bright their member stars were. Other open clusters that didn't have nicknames were a source of fun in attempting to discern a shape or similarity.

Planetary Nebula

Planetary nebula requires good contrast to bring out their shape. On brighter planetary nebula (Ring Nebula, Dumbbell nebula), the superbly baffled Questar did a nice job of showing both the nebula itself, but the overall shape and a little structure. A poorly baffled scope or one that displays poor contrast must struggle with additional aperture to show much of anything with planetary nebula.

Galaxies

Galaxies in such a small instrument are something of a lost cause unless you live/observe from a dark sky site. While I was able to find and observe the easy Messier galaxies (M31, M81, M82, etc) there really isn't anything to discern no matter how long I studied them. At this aperture size a gray smudge is a gray smudge. The saying "the wrong tool for the job" springs to mind.

Double Stars

The Questar is quite good at double stars and is able to resolve them up to its theoretical limits. In addition, just like planetary observing, the Questar's small aperture works to its advantage when attempting to split doubles. There are a LOT of interesting and easy doubles contained within the major constellations. Buy any constellation guide and a Questar owner could happily spend years splitting new and interesting doubles.

Personal thoughts on Questar owners and ownership

Years ago when I first started looking at the Questar I was surprised at how little information there was on the Internet on this little telescope. Today, the situation has changed very little. There is still a dearth of information available for the prospective buyer. I have some thoughts on why this is.

First, in all the discussion groups I've ever read or participated on, I've never witnessed so many people being just downright rude to anyone admitting they own a Questar. The typical scenario is an unsuspecting Questar owner shares his or her views or observing report and receives the following types of feedback

1. Why did you foolishly spend so much on a Questar when any other telescope can beat it?
2. Since you own a Questar you must be a snob
3. You must be inexperienced to have purchased such an instrument.

4. Don't attempt to tell us how the Questar is way better than any other telescope

The appalling list goes on and on. I have no idea where such bitterness comes from but the end result is many Questar owners have learned their lessons and have retreated to private groups and email exchanges. I have yet to meet or correspond with a Questar owner who was either a snob or exaggerated the claims of what their Questar could within the bounds of an enthusiastic owner.

Secondly, the typical Questar owners whom I've corresponded with can be put into one of 3 categories;

1. A birder who also has an interest in astronomy (the birding crowd loves the Questar)
2. Very experienced astronomers who purchase a Questar knowing exactly what they are getting.
3. A small number of novice astronomers fulfilling a dream of one day owning a Questar

The birders spend the bulk of their online time discussing their interests on their own discussion groups and show little interest in arguing with astronomers over the merits of their telescopes. I've read some of their observing reports online and they are genuinely honest and interested in the views. However, they've shown little to no patience in responding to the types of feedback listed above and retreat from the discussion groups wondering why astronomers are such equipment bullies.

The second group consists of experienced astronomers who purchase a Questar and appreciate the instrument for what it is. They show little to no interest in justifying their purchase to anybody and go about their lives USING and ENJOYING their Questar. I've found during personal correspondence that they will share their observing reports with other Questar owners but are firm about not doing so in an openly public forum. I can't say as I blame them.

The third group purchases a Questar as their first telescope and fulfills a dream of finally being able to buy the instrument they saw in so many ads over the years. However, as I'll go into in the next section, the Questar is really not a beginner's scope. If these folks stay in the hobby, they typically purchase another telescope more suited to their experience level and come back to the Questar at a later time.

If for a minute you think the types of feedback I've listed above are an exaggeration, I can personally attest to them. While I was evaluating the Questar I let friends and pen pals know that I was seriously considering buying one. While their responses were not as harsh as those listed above, they still fit into one of the 4 categories. I spent more time defending the decision than discussing my experiences.

Is the Questar Right for You

Since I wrote Part I of the Questar review, I've received a good number of emails inquiring whether I thought the Questar would suit them. I'm going to attempt to articulate my thoughts on this in the hopes that it will be food for thought for those contemplating such a purchase.

For beginners and those re-entering the hobby after a long absence, the Questar is not for you. I hold the opinion that the Questar is really an advanced instrument best suited for those who have been around the hobby for at least a year. I've said it before and I'll say it again - buying an advanced instrument as your

first telescope is the quick path right out of the hobby. Unless certain fundamental skills and a basic understanding of telescopes and astronomical concepts are attained, the beginner will become frustrated with the instrument and move onto to something rewarding and fun. Remember, we all pursue hobbies for relaxation reasons. Becoming frustrated with an instrument is not relaxing and the person will need to do something else to unwind.

For those who have a passion for deep sky observing and can only afford 1 telescope, the Questar is not for you. For these folks buy at least 8" of aperture and a detailed star map and you will be happy with your choice.

For those folks who do not appreciate or value refined instruments (be it a Questar, a top of the line apochromatic refractor, a premium dob, etc), the Questar is not for you. The things the Questar does so well will not be apparent and you will grow bitter in your purchase. If you like the small size and concept, buy an ETX-90 and pocket the difference in price. I need to qualify this category a bit. Simply because one doesn't value refined instruments, doesn't mean there is something "wrong" with the person. It's perfectly ok not to prize such instruments and saves you a ton of money in the long run. However, on the other hand, there is nothing "wrong" with those who do. Take a moment to think about it

For the experienced astronomer who is looking for a complete observing instrument in a small, easily portable package, the Questar is a good fit. I took the loaned Questar to the playground with my daughter for solar observing. On overnight trips to see relatives on the off chance it might be clear and on nights of observing with a larger instrument. Everything you need fits into one small carrying case and there is no excuse not to take it.

For experienced astronomers who appreciate refinements in the optics and mechanicals of telescopes, the Questar is right for you. The Questar is the height of design and execution of the small aperture Maksutov-Cassegrain. It has no peer and can honestly be called the best. I found little the Questar folks could improve upon. Everything worked flawlessly and the refinements maximized my viewing time with no problems detracting from the sessions.

For those experienced astronomers who want a high-quality quick setup scope, the Questar is right for you. Larger instruments get used less then many owners like to admit. The diminutive Questar can be picked up with one hand and away you go. With the built-in barlow and the constellations and lunar map on the optical tube and dew shield, you don't need anything else to begin your observing session. Such a powerful package may quickly become your most used telescope as the setup takes so little time. In my mind, my most used telescope should be the one I spend the most money on. It's funny how so many people buy the biggest telescope they can afford but end up using their short tube 80s 75% of the time.

For those astronomers who also have an interest in birding, this instrument will provide a solution for both your hobbies. Unlike so many other telescopes, the Questar can come to focus at a mere 10 feet. This means it can be used as a long distance microscope to examine, birds, leaves, insects, whatever.

Summary

It's my hope that this review is helpful for those interested in the Questar. With so little information out there, I felt this review just had to be written. It should be obvious by now that I'm enthusiastic about the Questar. I've made some attempts to provide counterexamples to characteristics about the Questar yet at other times I've allowed my enthusiasm to bubble through. I feel this is ok as enthusiasm for an instrument is part of what this hobby is about. Whatever instrument lights your fire and gets you out observing is the one for you.

I've made the decision that at some point next year, I'll be buying my own Questar. Few instruments have impressed me as much as the Questar and I know that I want my quick setup, take along telescope to be a high quality one. I can't think of a better instrument to fill such a category.

Thanks for reading.