There’s Gotta Be Something Better Than This

Uncle Rod’s Endless Search for the Grab ‘n Go Perfection

Rod Mollise

I’ve been having lots of problems with telescopes. Oh, not my big SCTs; it’s the little scopes that have been giving me fits. Up till now I have not been able to find a small scope, a “grab ‘n go” scope, that works for me. Let us define our terms. “Grab ‘n go scope” in my opinion denotes a telescope that you can grab ‘n go with...that is, you can pick it up fully assembled and trot it into the backyard in one trip. No assembling. No disassembling. Grab it and go to the backyard. My problem was that I hadn’t been able to find a scope of this kind that suited me. At all.

Why would I want a scope like this? Well, down here, with summer comin’ in, having a small scope that can be hauled out on a moment’s notice when the rains stop and the sucker holes open is wonderful. Even more wonderful, or at least safer, is having a scope that can be hauled back inside Chaos Manor South when the rains start up again (sad to say, another hurricane season will soon be upon us). Even if it’s not storming, there are always plenty of evenings when it’s miserably humid and hazy, and, despite the better angel of my nature, I can’t quite convince myself to set up even a C8. The difficulty was not in convincing myself I needed a grab ‘n go, but in finding one.

When I decided on the value of a small scope some years ago, I laid down one big ground rule: less than 6 inches. I knew good and well that anything larger wouldn’t fill the bill. Heck, even a 6 inch Dob seems like a lot to fool with on many nights. With this in mind, I began Grab ‘n Go Phase One: The Short Tube 80.

An ST 80 mounted on a smallish German mount, an EQ-1, seemed just the thing. This 3 inch Synta refractor had, from the time it first appeared in this country, received favorable reviews from just about every amateur who owned one. I knew its limitations, of course. 3 inches of short focal length refractor ain’t designed for the higher powered deep sky or (especially) planetary views that form the bulk of our observing on...
many humid and light-polluted Gulf of Mexico summer nights. At first, however, I was somewhat impressed: the chromatic aberration, the false color, present in the ST 80 was much less noticeable than I’d expected, and the little refractor did a fairly good job on the deep sky despite its small, wide field nature.

Actually, it wasn’t really the views through the 80 that killed it for me. It was finding things to view. While many, many DSOs were visible in the ST 80, many were just BARELY visible, and were a bear to locate. Combine bright skies that cut way down on the number of “guide stars” for hopping, with objects that are at best on the edge of visibility, and you’ll feel like a novice again when it comes to finding even familiar star clusters, galaxies and nebulae. So the 80 wasn’t makin’ it. What next? If the views were pretty good, and the main problem was object locating, how about a similarly small goto refractor?

By this time I owned a Nexstar 11 SCT, and had lost my skepticism about the value of goto. I’d decided it was the best thing ever to hit amateur astronomy for the person who has to observe from light polluted skies. If you’re pretty sure that the object of your desire is in your field, you’re more apt to really concentrate on that field and turn the object up using averted vision and other tricks. If you’re not quite sure the object is really there, you’re likely just to slew around aimlessly in a fruitless hunt.

Which goto refractor? How about an ETX? As is often the case, Uncle Rod didn’t want to spend much money. As a matter of fact, I’d seen an ETX 60 at a star party, and had been amazed at what it could do. The views the little scope delivered were on a par with those of the ST 80, but the computer added a level of comfort and convenience that was undeniable.

In fact, the 60 turned out to be really nice little telescope. In my experience, the ETX 60 has had the best optics of all the ETX refractors, being noticeably better than either the discontinued 70 or the new 80 in that regard. I had plenty of pleasant evenings with the 60, and some really incredible views with it under the dark skies of the Pisgah National Forest while on vacation.

But there was trouble in paradise. Like the ST 80, but even moreso, this was just not a scope to use on the planets. While the Moon was attractive enough at 100x, getting to this power with such a small aperture short f/1 scope required the creative use of barlows. The planets? If you held your mouth just right and used your imagination, you could convince yourself you were seeing Cassini’s Division on Saturn and a little banding on Jupiter. And, let’s face it; 60mm isn’t much aperture to use on the deep sky, even from dark locations.
Skywatch

What next? A teeny tiny Dobsonian, the Orion StarBlast 4 inch f/4 Newtonian (made, like the ST 80, by Synta in China) was making quite a splash amongst amateurs a couple of years ago. This little scope, it was said, gave splendid wide field views, but would also do 200x on the Moon and planets. Maybe this was my long-sought grab ‘n go? I ordered a StarBlast.

I’ve, frankly, never been disappointed with this little Dob. If it has a fault, it’s that the fast focal ratio challenges inexpensive eyepieces. Yes, there is plenty of coma; stars at the edge of the field look much like comets with anything less than a Nagler. Despite these shortcomings, I had an incredible experience with the StarBlast: following Hurricane Katrina. With all the lights of Mobile and the surrounding area dark, I spent a whole night cruising up and down the Cygnus – Cepheus Milky Way with the little guy—and was astounded. I don’t know that I’ve ever seen the North America Nebula better in any scope.

And yet, and yet... I had to admit that the StarBlast was still not “it.” While I could live with the coma, finding objects in light pollution was almost as difficult with the StarBlast as it had been with the ST 80. Galaxies were a little easier to see when touring Virgo, but most were still frighteningly dim smudges that were easily passed over. So I sat down and thought. And thought. And thought. Until the light bulb finally went on.

Where I’d been screwing up was by buying small fast focal ratio scope after short focal ratio scope. In the light pollution, wide fields are useless. City observers need more power, not less to darken up those light-gray sky backgrounds. Ah-ha! Problem solved. My long sought-after goto scope was the f/10 Celestron Nexstar 5. Small enough to fulfill the “out in one trip” rule, the NS5 was also equipped with goto, which would solve the “finding” problem handily as well.

Then one of my few remaining brain cells fired. Houston We Have a Problem: there are no more Nexstar 5s. Celestron has (shortsightedly in my opinion) discontinued the scope, and doesn’t offer an SCT smaller than 8 inches on a fork mount. Sure, I could have located a used NS5i. Maybe even a new one in a dealer’s stock. But I was wary of investing in a no-longer-produced scope that incorporates lots of electronics.

Well, what, then? Hmm...how about an ETX 125, the Meade Maksutov sister to the NS5?

I’d been skittish when it comes to Meade’s largest ETX over the years—too many stories about QA horrors, a shaky fork mount, and an insanely small finder. However, Meade had, I knew, made some changes to the scope that boded well. The fork has been completely redone. It still looks like plastic, but that’s just the outer skin. Like the Celestrons, the fork assembly is now aluminum. The plastic is just an outer covering. The junky little finder has been replaced by a red dot sight (think “bb gun finder”) which is much more practical for the scope. And this “LNT” (Level North Technology) module includes a battery backed clock (you no longer
have to set date and time every time you use the scope), and a magnetic compass and level sensors (the ETX’s formerly complicated alignment/home position routine has been much simplified).

The other recent change for the ETX is a fancy (or garish) looking tube: the OTAs of the scopes are no longer that classic Meade blue; instead they are emblazoned with color images of deep sky objects. This seemed a mite cheesy to me, but, heck, all scope tubes look black on a dark observing field. Oh, I’m describing the newest ETX series here, the “Premier Edition” scopes. The older blue-tube “AT” models are still available. While they incorporate the strengthened fork, they lack the LNT module/red dot finder.

I decided to go whole hog and buy the best of the best: an ETX125PE with UHTC coatings. I felt the ability of the scope to find north and almost align itself—like a GPS SCT—would come in handy for the balconies I set up on while on vacation. UHTC? My rule has always been, “buy the best coatings offered.” Don’t believe me? Ask the folks who went without Starbright on their Celestron OTAs to save a few bucks back when it was an extra-cost option.

While this top-of-the-line ETX set me back about 1300 bucks, I soothed myself with the knowledge that I’d have paid almost as much for the Nexstar 5i, more or less, and that if this scope solved my grab ‘n go problems and also served as a good “vacation scope,” the expenditure would have been well worth it. I was rapidly approaching this sum with my constant small scope buying, anyway—just ask Miss Dorothy!

After a fairly short wait, a big Meade box showed up on the front porch. Digging into it revealed the scope OTA/drivebase, the tripod, and the Autostar computer. It’s nice that Meade has finally gotten with the program and made the formerly “optional” tripod and computer hand-controller part of the package.

So how was it? How is it? In the backyard? Here are my somewhat disorganized and random thoughts about this new resident of Chaos Manor South.

- The OTA: the 125’s tube is emblazoned with a full-color image of the North America Nebula, yes, but it doesn’t look nearly as garish in person as it appears in the Meade ads. Heck, the Questar 3.5 has had that funky-looking Moon map stamped on it for nigh on 50 years...I may even come to like the 125’s er...“distinctive” tube.

- Build quality is significantly better than that of the last 125 I used—oh, about 4 years ago, I guess. Everything seems to fit together better, and it is apparent the steps Meade has taken to strengthen the fork have significantly reduced the original scope’s tendency to shakiness.

- In some ways I like the Autostar better than the Celestron Nexstar hand paddle. Particularly nice for my middle-aged eyes is the bright red on black display (Celestron uses the opposite color scheme). I can actually read the display without glasses! The Autostar is nothing if not full-featured, but, that said, I doubt many of the more “advanced” features—PEC, for instance—will get much use from me.

- Like the Celestron goto scopes, the 125 sounds and works much better with a good 12volt power source (like a jump start battery) than it does with AA cells or a wall-wart AC mains adapter. I had to wait a few days for the delivery of the 12v power cord; it finally showed up at my door in a separate package. It was fine, but I’ve replaced it with a 3rd party model from Scopestuff.com. Why? When will Meade and Celestron figure out that we do not want 50-foot long DC cables?
• The 125PE’s “auto-align” routine makes initial alignment very similar to what we’re used to with Meade and Celestron’s GPS scopes. You put the ETX in a simple Home Position (all that’s now required is that you rotate the scope counterclockwise to its hard stop). The scope then points north, levels itself, and heads for the first of two alignment stars just like its GPS-equipped big sisters. This routine takes a little longer than the similar procedure does on my Nexstar 11, but not annoyingly longer.

• Once I’d done the procedures that had been recommended to me by the ETX cognoscenti, the Calibrate Motors, Train Drives, and Calibrate Sensors routines (which you should be told to do in the ETX manual but are not), alignment stars were always very close to the red dot when the ETX stopped slewing. I really, really like the fact that you can make the finder’s red dot blink.

• The Smartfinder (as Meade calls the red dot part of the LNT module) is a godsend compared to the yucky ETX optical finders of yore. It’s cool that the computer turns the red dot on when you start alignment (you can also turn it on via an Autostar menu).

• Also a godsend is the fact that the computer turns the Smartfinder off when the alignment’s done. I hate to tell you how many sets of red dot finder button-batteries I’ve burned out by forgetting to shut the power off.

• Yes, when slewing, the ETX still sounds like a blender with a bad stomachache.

• On first light night, the Autostar picked two fairly close alignment stars, Capella and Rigel, but this did not seem to hurt accuracy.

• Goto accuracy? OK. I rate it not as good as the Nexstar 11 or the ASGT C8 (CG5), but slightly superior to a buddy’s NS8i. I’m not one to take a lot of care being precise about alignment procedures, so I was pleased to find that Meade’s “sync” feature meant that I could be as sloppy as I wanted, and, if I found that objects were “off,” I could sync on a nearby star or other object and get excellent pointing over a fairly good-sized area of the sky. Move a long ways from there and objects were off again? Just do another sync. Most of the time, though, syncing has been unnecessary, with the Meade putting the objects somewhere in the field of a 25mm eyepiece (this yields 75x in this long focal length scope, remember). Anyway, every single object I asked for on this initial evening was somewhere in the field of the included 26mm Super Plossl.

• The 125 seems to have a harder time landing on the Moon and planets. Sometimes they are well within the field, sometimes just barely, sometimes just outside. Not a big deal.

• The drive, setup in alt-az fashion, does OK. I’ve noted the occasional jump and jerk at 300x, but nothing excessive. Certainly a lot nicer than nudging the StarBlast along at high power.

• Focusing action on the 125 is a little stiffer than the “Celestron style” I’m used to, but smooth and the scope does NOT display a lot of focus shift. Comparable to the Meade and Celestron SCTs currently on the market, I’d say.

• The included plossl is not a bad eyepiece. Course, f/15 helps a lot.
• UHTC, Meade’s “Ultra High Transmission Coatings,” package does seem to help. I was surprised to pick up Thor’s Helmet with the 125 from a semi dark site. It’s bringing back dimmer DSOs than the StarBlast, over and above what you’d expect from an extra inch of aperture.

• The Blue Snowball really looked BLUE. In addition to displaying very good contrast (forget what you’ve been told about the ETX 125’s secondary baffle negating its MCT advantages), it does a very good job of rendering color on planetaries, stars and planets. I’ve rarely seen the color contrasts among the stars in/around the Trapezium appear more obvious.

• Saturn was, yes, amazingly beautiful at 300X. Not just a razor thin Cassini’s all the way ‘round either; plenty of contrasty disk detail, and, as above, good color rendition. Magnification? This 5-inch Maksutov was still delivering detail at 300x. BUT…above about 200x the exit pupil gets smallish and the floaters in my eyes become annoyingly prominent. The Moon was just perfect at 175x - 200x, with Gasendi’s floor being a welter of detail.

• Yes, the 125’s optics are excellent in typical ETX fashion.

• What’s with the funky springs, clips, and washers on the bolts used to attach the scope to the tripod? The first time you mount the scope, these springs and washers will go flying. Let them. They are not needed.

• Who was the genius who pasted-on one of the “Meade” labels on the tripod upside down? A screwdriver and some superglue fixed that. But. Come on Meade QA: DETAIL, DETAIL, DETAIL!

• In general, the tripod/wedge is OK. Sufficient. I’d have wished for more metal and less plastic, but that would have meant “heavier,” I suppose. “Good enough” is the verdict. I will say that it would be steadier if the tops of the tripod legs—the places where the legs attach to the top of the tripod—were metal rather than plastic.

• The included zipper-bag tripod bag is a nice touch. Even somewhat useful.

• The little ETX 60 was very “horsy” when it came to control via a laptop computer. In contrast, the 125 and its Autostar work very well when interfaced to a PC. This little scope worked real sweet with The Sky 6 Professional.

Final verdict on the “should I have gotten this scope/should you?” front? I’m satisfied. The little thing works better than any scope I have owned as a grab ‘n go. I feel it’s just about perfect in this regard. Combine 5 inches of aperture (there seems to be more difference between 4 and 5 inches than I’d have thought), goto, and a long focal length, and you have a scope that’s about as wonderful for my conditions as can be.

However…I’d be remiss if I didn’t say that the build quality of the 125, while considerably better than it was formerly, is still not as impressive as one might wish. It’s not just little things like the upside-down label, though that really does spell c-h-e-a-p and t-h-r-o-w-t-o-g-e-t-h-e-r. Combine a lot of plastic with drive motors than sound like weasels with tuberculosis, and the scope does not impress you as something you’ll pass down to your grandchildren. On the other hand, the ETX optics are as good as Questar’s optics, you’ve got goto, and you can buy four 5-inch ETXes for the price of one 90mm Questar.
Skywatch

The ETX 125 is a telescope that has a real personality. It is, admittedly, a personality that reminds you more of Charity Hope Valentine than Audrey Hepburn, but it is still a wonderful, delightful little scope. Yes, you do sometimes wonder if it’s going to have some sort of weird spasm; maybe even fall down in a self-pitying heap because you asked it to go to one more challenging NGC. But it never does.

I love my ETX. Let me repeat: I LOVE my sweet little ETX. For the first time I have a small telescope I both like and can live with. For now, anyway.

Uncle Rod
Ain’t Exactly a Refractor Kind of Guy — But ...

The William Optics Megrez Fluorite 80

Rod Mollise

It’s been a wild six months down here, y’all. “The winds have changed” for Uncle Rod and the denizens of Chaos Manor South; that’s for sure. Katrina boiled-up out of our beloved Gulf, leaving heartbreak in her wake. I don’t have to tell you that our astronomical activities were basically shut down for a couple of months, with cleanup, both at work and at home, occupying all our attention. Miss Dorothy and I did make the Deep South Regional Star Gaze (hosted by the hardy amateurs of New Orleans: “ain’t gonna wash us away”) in late October. I think it was very fitting that Deep South was held in Louisiana this year. We got down to Chiefland (the Chiefland Star Party, that is, under the dark skies of central Florida) too, which was therapeutic—being in an area where we didn’t have to look at downed trees and “blue roofs” was great. Never heard of a “blue roof”? While waiting to get your roof repaired, if you are lucky enough to find somebody to do the job, you cover the holes with blue plastic tarps from FEMA. Anyway, two great star parties, but then it was back to the work of helping put things back in order. Life is finally beginning to get back to some semblance of normalcy in Mobile—if not on the Mississippi Gulf Coast where I work, or, for sure, down in New Orleans.

The astronomy side of life is getting back in the groove. Oh, you know, things ain’t quite what they used to be. Sky and Telescope and Astronomy Magazine mysteriously appear in the front hall, sometimes months after their cover dates. First class mail goes awry too. About the only thing the Postman seems able to deliver with regularity in the post Katrina environment is junk mail. Luckily, however, UPS, FedEx, and the other freight companies don’t seem to have been as badly affected as the good old USPS. Packages containing astro-goodies are beginning to flow into these vaunted halls again, anyway. Including one big box that came all the way from China. A box filled with refractors.

Yeah, just when we thought things couldn’t any weirder, the CATs are pushed into the background, and the lens-scopes are taking center stage. When I’ve mentioned to my SCT-wielding compadres that I’ve been evaluating some fancy refractors, you’d
a-thought I’d said some bad words. No, I’ve never been one for fancy-dan lens-scopes. I’ll admit I did want (mightily) a Unitron Four Inch Photoequatorial back in the day, but I outgrew that notion. Sure, I own a Synta Short Tube 80, but who doesn’t? And that’s as far as it’s gone till now.

But don’t think I had a prejudiced thought in my little noggin as I lugged that big box into the front hall. “Like a kid at Christmas” was more like it. I approached this review with an open but skeptical mind. No, I’m not prejudiced against refractors, but I’ve still done some extensive head-scratchin’ when I’ve seen folks getting all worked up over AP or TV APOs. Just seems a mite silly to me. Aperture is the thing, right? Why settle for three, four, five, or six inches—no matter how finely made those inches are—when you can have eight, eleven, fourteen, or sixteen? Aperture wins.

Oh, I know what you’re thinking: “But Uncle Rod, why don’t we see you totin’ around a twenty-five-inch dob, then?” Well, all things being equal, aperture wins. But all things are seldom equal. Having an accurate drive and goto in a portable package makes an eleven more than competitive with a twenty-five in my not so humble opinion. But a three inch refractor? Until recently, I’d have said that that’s where I draw the line. After testing the remarkable Megrez Fluorite 80, though, I’m beginning to wonder whether I was wrong all along. Don’t tell anybody I said so, but those refractor nuts may be right about a few things.

Anyhoo, it’s been a depressing winter, and this three-inch APO was just the kind of distraction I needed. No, there wasn’t a 16-inch RCX in the box, but, heck, since this little refractor had traveled all the way from Taiwan to Possum Swamp, it deserved at least a little of my attention and consideration.

AS USUAL, I’m gettin’ ahead of the blamed story. This saga actually begins quite a ways back, just after The Storm in September of 2005. The folk at William Optics contacted me via good buddy Ray York at Anacortes to see if I might review a couple of their refractors. Gentleman Ray gently dissuaded Daniel at WO, telling him that I (and Miss Dorothy) had a few other things to occupy our minds and time for a while without adding evaluating scopes to the mix. But things did get better, and I gave WO the “we are go” signal this past February; thus the big box.
I don’t know how much y’all know about William Optics. I knew a little. Primarily, I knew they were producing some really great SCT and refractor diagonals for very reasonable prices. I’d used a few and was impressed by their build quality. I’d also tested one of their SCT Crayford focusers a long time back and been pretty impressed with that as well. What I was not aware of was that William Optics is now well on its way to becoming a major player in the astro-gear game, moving from being a small maker of accessories to being a major vendor of quality telescopes — think “Vixen,” not Synta. I had heard about a “Short Tube 80 killer,” the company had been producing for a while, the Megrez, an achromat, and was aware people liked it. Another thing I didn’t know, though, was that the company’s product line has mushroomed to include world-class (I was told) APO refractors, and eyepieces, too. Eyepieces competitive with what’s being done by TV, Meade, and Pentax (or so I’d heard)—but for less money.

So what all was in that big cardboard box? Well, first, there was the star of the show. WO’s “Megrez FL 80” (fluorite). Accompanying the Megrez was a little sister, the SD66 Zenithstar, a semi-APO (Uncle Rod still ain’t sure exactly what “semi-APO” means, but he hears all the refractor cognoscenti tossing’ that term around so he figures he ought to use it too). Way down in the bottom, revealed when your Ol’ Unk dived head first into the box, scattering packing material around the livin’ room like a crazed two-year-old splashing in a wading pool, were three of WO’s new widefield oculars, the Uwan 28, 16, and 7. Whooo-hoo....astro junk (er, “stuff”; as we’ll discuss shortly, these WO scopes and eyepieces didn’t look anything like “junk”!

I don’t believe in stringin’ y’all along—well, maybe a little bit—so I’ll say it right now: this equipment is world-class both in appearance and performance, easily competitive with anything on the market in its price range. Based on the obvious care and devotion to quality I saw in this gear, I’m of the opinion that, yes, WO is on its way to being a big player in amateur astronomy. Because of that, I’m not about to attempt to describe, discuss, and test all this stuff in one measly review. This will be the first of a three-parter, beginning with the Megrez FL 80 and continuing with the eyepieces and the little 66mm scope. Here we go, then.

The first thing I’ve got to say about the Megrez FL (hereafter just referred to as the Megrez)? Just how pretty this little (but not light; this f/6.9 “short tube” weighs in at a surprising 6.2 pounds!) thing is. Her white tube is a beautifully finished satin white, and her focuser, dew shield, and (striking) gold trim are just, well, SEXY. So much so that I couldn’t resist pulling her out of her case. This case is a very nice aluminum affair, rugged with good die-cut foam. With the nicely machined collapsible dew shield extended, the scope measures XX. With dew shield “collapsed, however, the whole tube is just
XX long, fitting handily into the XX long by XX wide case, which should easily fit in an overhead bin or even under an airline seat for travel to exotic observing locales. I was impressed, yes, and was soon running upstairs to show the new scope off to Miss D., hollering: "Honey, look what the UPS just brought! Ain't she cute?" God knows what Dorothy thought I was up to.

But a purty face ain’t everything—leastways that’s what I’ve always been told, though I’ve always ignored that advice—how well made did the scope seem mechanically? Let’s start with the focuser. This is a Crayford, and has a similar feel to the WO SCT Crayford I’d reviewed some time ago. Well, sorta, the earlier focuser seemed hard to adjust, and wanted to slip if not carefully tensioned. Not this one. It was easy to adjust via X and X, and never slipped. “Never” as in, “Not ever, not even with a great big 31 Nagler in place.”

In addition to adjustments for focuser feel/tension, one clever feature is the ability to rotate the focuser 360 degrees for comfortable viewing positions (or to adjust a camera’s view). At first I thought this was just a fillip. Why not just loosen the diagonal and rotate that for different viewing angles? It turns out this is a good safety feature. I’ve been known to loosen a diagonal a wee bit too much with a heavy Nagler inserted, and almost drop a 400 buck eyepiece to the ground—not a good outcome. Rotating the whole focuser means the eyepiece stays secure. Despite what’s been reported by some other reviewers, I didn’t find that tightening down the setscrew that locks the rotation “too hard” left an indent that made rotation unsmooth in the future.

Focus shift? You gotta be kiddin’. This focuser is as far from a Synta glue-grease special as it gets. Smooth, bubba, smooth. The knobs make focusing a joy, and not just because of their generous but not too-big size. This ain’t just a Cryford, you see, but a two-speed Crayford. That’s right. There’s a smaller knob centered on the right-side large focus knob. This imparts 1:10 reduction, and, in addition to delivering a wonderfully smooth feel to the focus action, it’s genuinely useful. One thing that’s always bugged me about shorter focal ratio scopes (hey, I’m an f/10 kinda guy, remember), is the shallow depth of
focus: “Almost there...there she is...WHOOPS...back up” and so on. The precision offered by the fine focuser (in both senses of that term) means that I feel like I have real control over the focusing process, that I can get the scope to dead-on in focus at very low powers, very high powers, and everything in-between.

The tube? Looks nice. But it’s what’s inside—inside the objective cell, that is, that counts. That’s the important thing, ain’t it? For those of you not entirely up to speed on modern refractors, this is an “APO,” an apochromat. Unlike achromats like the Synta Short Tube 80, APOs, like the Megrez are virtually color free. What that means to you is that the Moon, Venus, Mars, Jupiter, Saturn, and bright stars lose the annoying purple fringe/halo that surrounds any bright object viewed with an achromat. If you’re an imager, the improvement is even more dramatic and important. Looking at an image taken by the Megrez, you’ll immediately notice the difference. Stars are much smaller (and unfringed if you’re shooting color). Some nice wide field shots are possible with a short tube achromat, but they are always going to be compromised by this excess color—chromatic aberration.

Just how does this f/7 refractor do away with all that nasty color? Don’t ask me for technical details. I’ll leave those to optical gurus like Tom Back, who, incidentally, designed the objective for this scope. Suffice to say, the objective contains a fluorite element that sends the color purple straight to perdition where it belongs. These lens elements are contained in a CNC machined lens cell, and are “fully multicoated” with what WO refers to as “super-high transmission coatings.” Be that as it may, they show off a lovely green color in oblique light. Looking down the front of the tube, the objective didn’t seem to disappear as I’ve noted with some top-of-the-line APOs, but the coatings appeared to work well vis-à-vis image brightness, and I didn’t notice much in the way of light scatter or reflections even on bright objects.

Scattered light is further suppressed by a fully baffled tube—this one includes seven separate baffles. OK, but. Baffling is good, sure, but manufacturers, in their quest to suppress stray light sometimes go too far. All too many of the small refractors I’ve tested have their apertures stepped-down by too-aggressive baffles (too large, that is). With the considerable sum you’re paying for every millimeter of APO aperture, you dern sure don’t want to be shortchanged. I’m please to be able to report that this is one small refractor that appears to deliver every bit of its quoted aperture. Aiding the baffles is a good coating of flat black paint on the tube interior. Actually, it didn’t look quite as “black” as it might have, but its semi-rough texture appeared to be more than sufficient to help suppress reflections.

And all of this stuff is well and good. Yes, this is a beautiful telescope. There’s no plastic, all metal. Nice carrying case. Yadda, yadda, yadda. But how is it? How well does it deliver on its potential? That’s always the question. The Megrez looked every inch the lady in the living room. But would she be a tiger on the observing field? I intended to find out. Doing so, however, required me to pass two hurdles. The first was what amateurs have come to call “The New Scope Curse.” You know…the instant a new scope enters the house, the sky clouds over. Superstition you say? All I know is that after the Megrez arrived, we were treated to a week of foul, cloudy weather.

When things improved weather-wise, I had one more challenge to face before I could actually use this cute scope: how to mount it? Like most top-of-the-line refractors, the Megrez is sold as a optical tube only. You furnish the mounting. Luckily, we’ve got a couple of EQ4 German equatorial mounts in the house which would provide a steady perch for the M80. Actually, I chose to mount the scope on Celestron’s goto version of the Synta EQ4, the CG5. I wanted to view a lot of stuff, maybe even
take some pictures, and having a driven goto mount would save a lot of time.

But how to get the Megrez onto the CG5? Like WO’s other recent scopes, the Megrez is equipped with an “L” shaped mounting bracket. I’d requested the WO folks ship the scope with Vixen compatible tube rings, and I assumed the “L” bracket was that. It was. Sort of. The bracket is the correct width to fit the CG5’s Vixen-style saddle. But there are a couple of big, BIG caveats. The first is that the bracket is rather short to provide a secure and adjustable interface to the mount. More problematical is that the bracket’s sides are straight rather than tapered like a normal Vixen style bracket. I assumed the “L” bracket would be good enough if I tightened down the mount’s dovetail setscrews, though. Gosh, was I wrong. Mounted the scope, cranked the setscrews down as tight as I could, began the alignment, and, just as the CG5 began slewing to the first star, the Megrez fell off the mount!

Talk about heart-stopping! I was alert enough that I managed to break the scope’s fall if not catch it. Despite acquiring a nice black and blue bruise on my forearm, I was not able to prevent the scope’s front end (luckily I had the dew shield extended) from hitting the floor with a good, loud THUNK. I was almost afraid to look, but other than some marring of the dew shield (which may now not be quite a beautifully round as it was before the Fall), there was no damage. Heck, a collimation check revealed that the scope’s alignment was still perfect.

Despite scaring a few of your Old Uncle’s remaining nine lives out of him, this accident, if nothing else, proved how well-made and sturdy this little sucker is. In the interests of safety, however, I rigged a short Vixen dovetail to the “L” bracket. I’m told that the most recent WO scopes are equipped with tapered brackets which should hold the scope more securely on a Vixen compatible mount. Oh, by the way, the bracket also features a couple of ¼-20 holes that would allow you to use the scope on a standard video/camera tripod. Keep in mind, though, that this is a heavy scope, and that you’ll need a very heavy-duty photo tripod if you go that route.

With all the alarums and excursions over, I got the scope—which was rock-solid on the CG5--pointed at the sky. All my testing was done, by the way, with Nagler and Panoptic eyepieces in the interests of giving the Megrez a chance to show-off its ultimate potential. The two oculars I used the most were a 22mm Panoptic and a 12mm Nagler Type 2. While I occasionally put a 27 Pan in play, the substantially light-polluted skies visible from Chaos Manor South’s backyard meant really low powers were problematical. Even the 23X (approximately) delivered by the 22 often yielded a too-bright sky background, really. Naturally, from a dark location, a scope of this focal length can deliver all that wonderful wide field you lust after. Oh, one common gotcha with refractors is arranging things so you can come to focus with both 1.25 inch and 2 inch diagonals and eyepieces. How did I manage my collection of 2 inch and 1.25 inch eyepieces with this scope?

First target? M42 was riding high, but this was a refractor. An APO refractor. As much as I longed to see the expanse of The Great Nebula I knew this short focal length scope could deliver, I pointed it
at Rigel first. The question was color, or the lack of it. I'm pleased to say that the Megrez passed this first test with "flying colors. Color is very well controlled in this scope. That's as it should be with a fluorite element and an f/7 focal ratio, but I've heard so many questionable claims of "color free refractor" over the years, that it was wonderful to see a scope that actually delivered. Rigel and Regulus were dead white (Sirius was behind a tree). I mean no color fringes whatsoever in focus with the star centered in the field. I thought that when I defocused I could detect a very faint tinge of green, but it was quite subtle. Was there any in-focus color at all? When I positioned the star well off axis, I thought I could occasionally note the faintest tinge of violet with, but this was very subtle indeed. I was never really sure whether what I was seeing was the scope or the eyepiece.

OK so far. But how would the Megrez do on Saturn? Although refractors are often thought of as "planetary scopes," a planet can be a huge challenge for them. Even Saturn is bright enough to bring out plenty of color in chromatically-challenged scopes. And at three inches in aperture, a small short focal length scope like the Megrez really has to deliver on high-magnification-handling, contrast, and resolution if there's to be any hope of seeing much detail.

All it took with this scope was one glance at Saturn to reassure me about color. The planet was completely colorless as far as the violet goes. The actual color of Saturn seemed very "true." The disk was a cream color, while the rings appeared to have more of a subtle bluish-gray tint.

How much power will the Megrez II take on a planet? I ran it up to 200x with barlows and short focal length eyepieces, and was rewarded with a nice view of not only Cassini's division, but very contrasty looking cloud features on the disk. While 200X is about at the oft-quoted magnification "limit" for a three inch, I thought I could have gone even higher under good seeing conditions. Actually, the limitation didn't seem to be the optics, but the physics of producing high powers with such a small-aperture telescope. Even at f/7 with an 80mm, it's hard to produce really high powers. High power Barlows are de rigueur, floaters in your eyes become annoying at such small exit pupils, and stars begin to look bloated due to the size of an 80's Airy disks.

While Saturn (or any planet) is, in my opinion, the best test of optical quality, I did attempt a star test despite the less than good seeing conditions. With diffraction rings dancing all over the place, it was hard to be exactly sure what was going on, but the outer diffraction rings—from what I could tell—looked very similar on both sides of focus, indicating good correction for spherical aberration. Despite the scope's tumble, as mentioned earlier, collimation was spot on.

Being able to use high powers with what is essentially a wide-field short tube is handy and impressive, but, hey, let's face it. That's not what this scope is for. What most people will want it for is to open up those wide, wide vistas of deep space. And, strangely, many of these wide field fans will be more concerned—it seems—about what the stars at the edge of the field look like rather than how those in the center of the field appear. A flat, wide field is really the holy grail of deep sky refractor users. I'm pleased to report, then, that the edge of field quality of the Megrez Fluorite is pretty impressive. Using high quality eyepieces—Naglers, Pentaxes, Panoptics, and UWANs (more on those soon)—stars at the edge of the field, if not quite the tiny pinpoints found at the field center, were decently small. Certainly, they were not the "seagulls" of a Short Tube 80. I'd rate star quality as "excellent" out to about 80% of the field width. I wish I could invite y'all over for a look through the Megrez, but Miss D. might get a little finicky with hordes of gear-hungry amateurs descending en masse on the ol' manse. So I'll do the next best thing, and show you a picture.
The image in of the Horsehead Nebula was taken with an SBIG ST2000. While I'll admit that its chip is not huge in today's terms, I think it takes in enough field to show that the Megrez does a pretty good job edge-wise. If ol' Horsey looks a little ragged, don't blame the scope, blame somebody—me—who's still tryin' to figure out just how you take a picture with one of these gull-derned new-fangled CCD cameras.

So I liked this little bitty refractor. Are there any pitfalls involved in small-APOdom? And gotchas? Any "darned-I-shoulda-knowneds"? Maybe. You will be pleased to hear, though, that for once price is not one of these. Yep, small APOs are known for their astronomical prices. That is not me trying to be funny in my down-home fashion, either. Several makers' 80mm class APOs go for as much as three thousand dollars. That's right, gang, a thousand dollars an inch. A finely made three-inch refractor has multitudes of uses from imaging, to wide field viewing, to guiding at high power, but these—you'll pardon me—crazy prices are one of the big reasons I've been a small-apo-fence-sitter. In this regard, the Megrez II fluorite is a tremendous breakthrough. It sells, you see, for 898 US$. Yes, that's still a fair amount for a three-inch, even in today's inflated bucks, but considering the scope's usefulness, I think it's doable—considerable, anyway—for many amateurs.

But, yes, there is one gotcha. Despite the fineness of the Megrez Fluorite, I found myself occasionally feeling a little let down. I wasn't sure why. Optics? Great. Build quality? Amazing for the price. What? Then it hit me. This small scope is so well-made that I tended to forget that it is "just" an 80mm. That's it, you see: an 80 is an 80 is an 80 no matter how well made. Instead of expecting the Megrez to do the impossible, I needed to remember that there's no violating those stern ol' laws of physics. A little cold water in the face would probably be a good thing. How about a shootout between Miss Megrez and my Meade ETX125?

The ETX costs just a little more than the Megrez, but is blessed with two extra inches of aperture—and an included goto fork mount. No, the Meade is not heirloom quality build-wise, but I wasn't interested in that. What I wanted to know was how the images offered by a mass produced Ford/Chevy/Dodge of an MCT would fare against those of this Porsche of a refractor. It didn't take long to find out. The Megrez's images—of both planets and deep sky objects—were inferior to those yielded by the ETX125 in terms of resolution and detail, which is just what I'd expected. M15, for example, despite getting low in the west, gave up a star or three to the ETX at high power. At all magnifications it was just a round fuzzball in the Megrez. Two inches of extra aperture were just too much for the little 80 to keep up with.

But…this "shootout" was comparing apples to oranges to some extent. The ETX125 is a long focal length narrow-field instrument, the 80 just the opposite. For what it was designed to do: produce stunning wide field views and images, the Megrez left the Meade in the dust. The bottom line is that the Megrez produced images as beautiful as I've ever seen in any 80mm scope of any design. It's just important for the new owner to realize that this scope is not a miracle worker. Enjoy it for what it can do well, but realize that there will be many times when three inches will not be enough.

What mattered to me was that the Megrez Fluorite 80mm was well made, capable of doing several things well, and appealed to me, given the type of observing I do. I'd find this telescope constantly useful, and don't mind saying that for this level of quality and usability I consider the Megrez a bargain.

Addendum: The Megrez II Fluorite Doublet is currently available, but I note that it is referred to as a “Special Edition.” That leads me to believe that it may not be around forever. If you want one (and you should), I advise you to get off the fence I sat on for so long and offer up your credit card to the good folk at Anacortes. If you somehow miss
Skywatch

out, William Optics is also selling a similarly configured “Zenithstar Anniversary Edition” with a red tube (not as pretty as the Megrez Flourite’s nice white one if you ask me) for a similar price.

THE 32MM PLOSSL

Stu Forster

That’s all you need to know. What am I referring to? The 32mm Plossl is the best all around low power eyepiece you can use in 1-1/4 focusers. Plossl eyepieces are inexpensive yet sharp eyepieces with apparent fields of view of 50-52 degrees. Yes, Meade and Celestron supply 40mm Plossl’s in 1-1/4” (shame on both of you), but it is a marketing ploy, as you will attain lower powers, but your maximum field of view is still limited by the 1-1/4” eyepiece’s 28mm field stop.

Let’s look at why. We’ll use three different scopes that are commonly in amateur’s arsenals and see that although they appear very different, the 32mm Plossl is a constant. The actual maximum field of view for an eyepiece is limited by its field stop. This is a small ring of metal found inside the eyepiece barrel (usually at the focal plane) that sharpens up the edges of the visual field and also helps define it. Some eyepieces have no field stop, but rely on the inside of the eyepiece barrel to do double duty as both a mount for the glass elements and as field stop. For any optical tube assembly, the maximum field of view (FOV) is determined by field stop size and focal length of the objective (main mirror or lens).

The formula for maximum FOV for any telescope is:

\[
\text{MAX FOV} = \frac{\text{field stop diameter}}{\text{focal length of objective}} \times 57.3 \text{ degrees (one radian)}
\]

Now let’s look at an 80mm ST (short tube) which refers to a commonly used 80mm f/5 refractor. Remember that the maximum inside diameter/field stop of a 1-1/4” eyepiece is 28mm, and true FOV of an optical configuration is:

\[
\text{True FOV} = \frac{\text{apparent FOV}}{\text{power}}
\]

\[
\text{Power (magnification)} = \frac{\text{focal length of objective}}{\text{focal length of eyepiece}}
\]

So, back to the 80mm ST. Plop in a 32mm Plossl and we get:

\[
\frac{400\text{mm}}{32\text{mm}} = 12.5x \text{ for magnification.}
\]

Now, let’s look at true FOV:

\[
\frac{50 \text{ degrees}}{12.5 \text{ power}} = 4 \text{ degree true FOV}
\]

Now let’s look at max FOV:

\[
\text{Max FOV} = \frac{28\text{mm}}{400\text{mm}} \times 57.3 \text{ = 4.01 degrees = PERFECT MATCH}
\]

Now let’s try that with a 10” f/5 reflector. The focal length is now 1,250mm.

\[
\text{Power} = \frac{1250}{32} = 39x
\]

\[
\text{Max FOV for this system} = \frac{28\text{mm}}{1250\text{mm}} \times 57.3 \text{ degree} = 1.28 \text{ degree}
\]

Now, true FOV = 52 degree apparent FOV / 39x = 1.33 degree = almost dead on!!

Finally, let’s look at a commonly owned SCT, the 8” f-10 scope with a focal length of 2000mm.

\[
\text{Max FOV} = \frac{28\text{mm}}{2000\text{mm}} \times 57.3 \text{ degree} = 0.8 \text{ degree}
\]
Now, True FOV = \[\frac{2000\text{mm}}{32\text{mm}} = 62.5\text{x} = 52\text{ degree AFOV/62.5x = 0.83 degree}\]

Again, almost dead on.

Well, what about the 40mm 1 ¼” Eyepieces from Meade and Celestron?

Magnification = \[\frac{2000\text{mm}}{40\text{mm}} = 50\text{x}\]

True FOV should be 52 degrees/50 or just over 1 degree FOV, HOWEVER, the field stop limits us to 0.8 degree. SO! Less magnification and the same small true FOV.

Shame on you Meade and Celestron.

The lesson? Don’t bother with an eyepiece of greater than 32mm Focal Length in 1-1/4” format, you gain nothing and lose magnification.

Who Wants to be a Daredevil?

Patrick L. Barry and Dr. Tony Phillips

When exploring space, NASA naturally wants to use all the newest and coolest technologies—artificial intelligence, solar sails, onboard supercomputers, exotic materials.

But “new” also means unproven and risky, and that could be a problem. Remember HAL in the movie “2001: A Space Odyssey”? The rebellious computer clearly needed some pre-flight testing.

Testing advanced technologies in space is the mission of the New Millennium Program (NMP), created by NASA’s Science Mission Directorate in 1995 and run by JPL. Like the daredevil test pilots of the 1950s who would fly the latest jet technology, NMP flies new technologies in space to see if they’re ready for prime time. That way, future missions can use the technologies with much less risk.

Example: In 1999, the program’s Deep Space 1 probe tested a system called “AutoNav,” short for Autonomous Navigation. AutoNav used artificial intelligence to steer the spacecraft without human intervention. It worked so well that elements of AutoNav were installed on a real mission, Deep Impact, which famously blasted a crater in Comet Tempel 1 on July 4, 2005. Without AutoNav, the projectile would have completely missed the comet.

Some NMP technologies “allow us to do things that we literally could not do before,” says Jack Stocky, Chief Technologist for NMP. Dozens of innovative technologies tested by NMP will lead to satellites and space probes that are smaller, lighter, more capable and even cheaper than those of today.

Another example: An NMP test mission called Space Technology 9, which is still in the planning phase, may test-fly a solar sail. Solar sails use the slight pressure of sunlight itself, instead of heavy fuels, to propel a spacecraft. Two proposed NASA missions would be possible only with dependable solar sails—L1 Diamond and Solar Polar Imager—both of which would use solar sails to fly spacecraft that would study the Sun.

“The technologies that we validate have future missions that need them,” Stocky says. “We try to target [missions] that are about 15 to 20 years out.”

A menagerie of other cool NMP technologies include ion thrusters, hyperspectral imagers, and miniaturized electronics for spacecraft navigation and control. NMP focuses on technologies that have been proven in the laboratory but must be tested in the extreme cold, vacuum, and high radiation environment of space, which can’t be fully recreated in the lab.
New NMP missions fly every year and one-half to two years, taking tomorrow's space technology for a daredevil test drive.

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

Dammit, Beavis…Anderson’s got a
good job now.

Yeah, yeah, heh-heh, Butthead.
They call him “Hank Hill.” Heh, heh--what a dillweed.

And all I’ve got is you, Beavis,
you Buttmunch.

I’ll admit I couldn’t help but
feel a wee bit sorry for the two
miscreants. Their show long since
toast, they couldn’t even raise a
loan to buy a platter of nachos
in this town.

So, naturally, I opened the front
door of Chaos Manor South to
console the two cretins, and,
just as naturally, one of the
delinquents immediately rewarded
me with a Mayo Jar right between
the eyes. A Mayo Jar Kept on Funk
and Wagnall’s Front Porch for a
Fortnight, a Mayo Jar
Containing….

RUMOURS

More changes are going down at
Meade. Most of us are aware that
the company’s founder, John
Diebel, retired last year.
However, now comes word that his
successor at the helm, CEO Steven
Murdock, is calling it quits.
Murdock, who, the anonymous one
has been told, was instrumental
in bringing the new RCX scopes to
market is outa there.

While we’re told that this is
just a case of Murdock retiring,
there are plenty of whispers
concerning Meade’s rumored
financial problems, and whether
that was really what’s behind
this long-time scope-industry
figure stepping down (Mike
Murdock started his career as a
glass-pusher at the long-gone
Coulter Optical).
The premium eyepiece market won’t be TV, TV, TV (and Pentax, Pentax, Pentax) for much longer.

While TeleVue still produces what are undoubtedly the most respected amateur eyepieces in the world, it’s no longer without competition. And I’m not just talking about Meade, who recently revamped their long-dormant line of premium eyepieces. Expect to see a floodgate opening over the next year as premium class Chinese eyepieces pour onto the astro market.

These oculars will not be rock-bottom-priced like Chinese plossls (which have now come to completely and utterly dominate the introductory/low price market), but they will be less expensive than TV or Pentax (or Meade, for that matter). The initial examples we’ve seen, the William Optics “Uwans” are considerably less expensive than the big names and are very competitive build quality and image-wise.

Where is Celestron’s RCX competitor? Good question. The big DK scope the company was showing off on a custom GEM a while back is officially DEAD. Company bigwigs are not, however, ruling out smaller premium OTAs in this design (corrected Dall-Kirkham). We’ll see. Might be a pretty good time for Celestron to sit pat and watch Meade appear to struggle. It’s pretty evident that the new SkyAlign scopes from Celestron are puttin’ a hurtin’ on somebody in Irvine, or Meade wouldn’t be runnin’ BIG astro-mag ads puttin’ down the SkyAlign concept (“Which objects are bright objects?”).

--The Anonymous Astronomer

The Wrap-up...

I’d like to say “See y’all in July,” but with another hurricane season upon us, I don’t know what to say when it comes to the future. I do hope the next issue will be on time. There was no doubt this one would be late, as Unk Rod spent a month in Maine (enlivened by a trip down to Cambridge to visit/annoy the Sky Publishing Gang) and a couple of weeks in Los Angeles. Things are calm now, and if they remain so, I promise a nice, fat Summer Issue. If I get your help, of course.

As always, I solicit your fine articles. As, I think you can see from this issue, the quality of our contributors is getting higher all the time, with some of ‘em puttin’ poor little me to shame.

I inserted this in the last issue, but still haven’t received any response. I’ve got some articles for which I don’t have names. If your submission has not appeared, let me know:

...things were EXTREMELY confused down here for a while. If you submitted material to me and it hasn’t been printed in this issue, please e-mail me. Some material was lost with the hard drive crashes, etc., that happened due to the storm and the funky AC after.

--Unka Rod