

The Urban Astronomer's Survival Guide:
An Interview With Rod Mollise



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Brian Ventrudo, Editor, One-Minute Astronomer (OMA): Hello. This is Brian Ventrudo, editor of OneMinuteAstronomer.com. Our topic today is urban astronomy.

Now, many city-based amateur astronomers believe you need to dark country skies to see faint deep-sky objects like galaxies and nebulae.

After all, in dark sky, you get better contrast in your telescope than you can in washed-out city skies. And it's true. Dark sky is almost always better than light-polluted sky for stargazing.

But if you live in a decent-sized city and you think you have to hold out for dark sky all the time, there's a practical problem here. It takes time and energy (and more than a few dollars) to truck your telescope out an hour or so outside of the city.

And let's face it, the harder you make it for yourself to observe with your telescope, the more likely it is that you won't do much observing at all. And you might eventually lose interest in this wonderful pastime of amateur astronomy.

But the truth is, you can see many beautiful celestial objects, even in bright city skies... if you know where and how to look and if you know a few tricks of the trade.

So to help you out, I've got on the line today Mr. Rod Mollise, also known as "Uncle Rod". Rod is the author of "The Urban Astronomer's Guide", which is part of Patrick Moore's "Practical Astronomy" series, published by Springer-Verlag.

Rod's been an amateur astronomer, well, for maybe for more years than he cares to admit. But he knows a thing or two about tackling light-polluted city skies and getting the most out of a small telescope in the city.

"Hello, Rod..."

Rod Mollise (RM): Hello, Brian, and thanks very much for having me on, buddy.

OMA: Thanks for joining me. So, tell us a bit about your background in astronomy. How did you get into this captivating pastime? And why astronomy instead of say, bird watching or coin collecting?

RM: Well Brian, that's one question I probably can't answer. As far back as I can remember, at least since I was four or five years old, I had always been interested in what I called "the great out there". I guess kids... interests come and go... but astronomy, science, math, those were

things that must have taken hold at a very early age for me and never let up. I can't tell you the first time I wondered about the night sky. I can go back to the first astronomy book I ever got, but I honestly can't tell you a time I was not interested in astronomy.

OMA: I started about the same age myself, about four or five and I still have a few of my books from those old days. Tell me about your first telescope. What did you have? And at what age?

RM: I guess my first real telescope was the telescope I did not want. The first telescope I remember actually wanting—and that was the point I realized that you could own your own telescope, a real telescope—was one of the A.C. Gilbert 2" reflecting telescopes that were popular in the 1950's. Unfortunately, we were what you would call these days "po folks". So the \$29.95 or whatever it was that Mr. A. C. Gilbert wanted for one of his wonderscopes was not forthcoming. But my old man, an engineer by profession, was a creative sort and a scrounger, and he found a little Tasco 3" Newtonian hidden in a downtown pawn shop and rescued it for me. It wasn't much of a telescope but that's all it took for me to take off and start flyin' Brian.

OMA: Well, that's funny because my first telescope—it would have been a decade later I suppose—but my first was a 3-inch Tasco reflector also. I'm not sure where it is these days—it still lives somewhere—but that was quite a telescope—

RM: Well that's one way to put it. Mine was quite a telescope, but not in a good way, and I'm not sure what happened to it and I'm not sure I want to know.

OMA: Oh, so you don't use it anymore?

RM: It was gone with the wind probably sometime back in the mid-60's.

OMA: There you go. What kind of telescope gear have you got today? Have you got one or many telescopes? What do you use?

RM: I'd be embarrassed to tell you and your listeners how many telescope are hanging out here at Chaos Manor South right now. But I will tell you that what we use mostly for visual observing are a 12.5" Dobsonian equipped with a set of digital setting circles, and we often use our NexStar 11 GPS... a Celestron C11.

OMA: With nice big telescopes like that, do you specialize in a particular kind of astronomy? Are you doing visual stuff, are you doing photography? What's your specialty, if anything these days?

RM: I tell people I'm the original astronomy dilettante. That one night I might look at the moon and the next night I might be hunting Hickson galaxy groups and the next night I might be imaging faint nebulae. Part of that is because I am an astronomy writer and I do quite a few reviews, so I may be asked to review a mount and take pictures using that telescope mount. What I'm most interested in at the moment is visual observing. Maybe that's good because it keeps me interested in astronomy and informed on amateur astronomy on a lot of different levels.

OMA: O.K. Now a lot of well-known amateur astronomers—and I would certainly consider you to be well-known, being a published author and speaker. But a lot of well-known amateurs like David Levy or Jack Newton have set themselves up in places that have extremely dark sky. But you live around Mobile, Alabama, correct?

RM: That's right, Brian.

OMA: What's the sky like there?

RM: It's pretty putrid, actually. But like many amateur astronomers, well known or not so well-known, while I do astronomy for money and I teach it at the university level and write about it, I'm also tied to my workplace and so is my wife. And for a lot of us, that means we make the best of the skies we have whether they are good or bad. And that's the bottom line for everybody: make the best of what you've got.

OMA: That's a good point we'd like to explore more here. A lot of people think you need dark sky to see anything. As the author of the "Urban Astronomer's Guide", I'm assuming you don't agree with that?

RM: Well I do and I don't Brian. Let me preface this all by saying that I certainly don't recommend nothing but urban astronomy. I am a firm believer in getting out to dark sights and joining in the battle against light pollution maybe by joining the International Dark Sky Association—the IDA. Certainly there's nothing that stimulates or helps continue your interest in astronomy than getting out where it's really dark, even if that's a club sight an hour from home. But the other side of that is that you can't remain interested in astronomy when you only get out once a month. And how many club observing sessions are ruined by weather, and that means maybe you don't get out every month. Maybe you get out every few months, and you just can't keep going that way.

If you're going to remain interested in amateur astronomy, you're going to have to get out more often and have to get out into the back yard and make the best of what you've got there.

OMA: Fair enough. I'm from an observing site also... I'm in suburban Ottawa, Canada, so it's not much fun here. But you can see a few things. Now from your locale, for example, what can you expect to see from in town with a modest telescope? What kind of objects?

RM: Canada? Ain't that north of the Mason-Dixon line, boy?

OMA: It is!

RM: That's what I've heard. Anyway, seriously, what can you see from the average light-polluted sky, and by that we're saying maybe magnitude 4 or 5 limit, somewhere in there. What you can see is the entire Messier list, the entire list of Charles Messier's deep-sky objects, you can see many other clusters, nebulae, and galaxies besides.

OMA: So that's 100+ objects.

RM: One-hundred-plus objects, and once you work beyond the Messier, there are plenty of NGC objects... that's the next list up for most amateur astronomers... to see as well. You couldn't see everything from your backyard in a year or five years or ten years. Even if you really worked at it. There's plenty to be seen. It's just a matter of getting out there and seeing it.

OMA: So more than just the moon and planets... the bright stuff.

RM: Far, far more than just the moon and planets. I live exactly two miles from the downtown of a city of 250,000, and I have seen the entire Messier list from my backyard including the supposedly hard ones like M101 and M74. And many of those with a 4" telescope...

OMA: With a 4" telescope!

RM: There is no lack of things to see.

OMA: Now that reminds me, your place is called "Chaos Manor South". You've mentioned it once. Dare I ask where that name came from?

RM: Well actually, I was inspired by one of my heroes in the writing game, Jerry Pournelle. Many of you may remember him as a science fiction author. And also he had a computer column in Byte in the early days of personal computers. I remember sitting down and reading one of his articles one time where he referred to their home as "Chaos Manor" and I said, "Dang, that's just like this place. This is Chaos Manor South!" And if you walked in the door you'd see stacks of astronomy and technical and mathematical books, computers, and telescopes and you name it and we love it!

OMA: I didn't know that. That's a great story.

RM: Now it can be told.

OMA: So if you've got a backyard with a decent view. Mine is so-so. Have you got a fairly clear view of the horizon?

RM: I used to. As the years have gone on, the backyard has grown up more and more to the point where I'm slowly being forced out. Living in the historic district, as we do, you do not cut down a tree. But it did provide many a year of observing pleasure. And we're reaching the end of our tenure here in the next little while as my wife Dorothy and I reach slowly, ever so slowly, retirement age when we can go out—whether it's a pitch-black site or not—have an open area and a real observatory out somewhere. But this yard near downtown provided year after year of pleasure.

OMA: Alright. Now for someone who doesn't have a backyard, or maybe for someone whose backyard is more advanced than yours and the trees have grown up around it, or maybe they live in an apartment, can you suggest some options in the city.

RM: Well, I talk about this in the book, and without trying to plug the book too much, I recommend that because it's a subject with a lot of ins and outs for the city dweller, and it involves things like police, crime, and things like that. But the long and short is that for the city dweller without a detached house and a backyard, three things suggest themselves.

First of all is a balcony. Just about anybody, or at least most people living in an apartment have a balcony of some kind. Normally, you think you can't see much from there but actually that's not quite the case. Especially if you have a balcony facing east or west, you can take in a large swatch of the sky. And it has the added advantage of bringing you about street level and maybe out of some of the ambient light pollution down there.

Now what if you don't have a balcony? Maybe the next best or even a better thing is if your apartment building or other urban digs has a flat roof and you have access to it. Those things will depend on several factors, but if you do have that situation, a rooftop can probably be the best urban observing locale of all. You've got a large open area. You've probably got a wide expanse of the sky blocked only by adjacent buildings. And again you're up above all the street lights and ambient light pollution down below. And we can talk about that a little more later if you like, but skyglow is not the whole of the urban light pollution equation. Much of the problem is from nearby ambient light.

And the third possibility I would offer is that almost every North American or European city of any size has an astronomy club. You may not know this, but even New York City has a large

and active astronomy club. And by active I don't mean they just sit around and talk. They get out and observe in New York City locations and they see a lot.

If you can approach a children's museum or a science museum and they may have a parking lot or a rooftop or some other area that is much better for observing than you could locate on your own.

But the bottom line is be creative. And again I want to recommend look in the section on observing site choice in the book because like I said there are several safety and other concerns for urban astronomers that I'd really like all of you to be aware of because it is a rather involved subject. But the bottom line is there are urban observing sites and you can find them.

OMA: So if you've got a site and you can't wait to get out there... let's talk about telescopes. Does light pollution affect the kind of telescope you should use for city observing? Do you need a special "city telescope"?

RM: In a way, you do. And not in the way that most people think. One thing I'd like to do right here before we go any further is debunk what I call the "urban aperture myth". You may have heard people say that if you live in the city or in the heavily-light-polluted suburbs you should not buy a large telescope. It will just collect extra light and you won't see as much in a large telescope as you would see in a smaller one.

And the answer, being polite, is the word: rubbish!

If you want to... I could go on and on about this silly story... but if you want to prove or disprove it for yourself, get a 4-inch telescope, get a 12-inch telescope, set them up in your city observing location and point them at M13. Use eyepieces that give similar magnification and take a look. In the 4-inch you're going to see a bright smudge and in the 12-inch you're going to see a ball of stars. I won't belabor the point but in the city in particular, aperture always wins all other things being equal.

In dark locations, small aperture telescopes can perform incredibly well and keep up very well with larger telescopes. Such is not the case in the city. In the city, all things being equal, always choose the largest telescope.

Well things aren't always equal, so let me amend that to say: choose the largest telescope you can handle. Obviously if you live on a 5th-floor walk-up you can't have a 16-inch solid-tube Dobsonian. If you're going to observe in the city, get the largest-aperture telescope you can handle, that you can store, and that you can move around. That is very, very important.

OMA: Now we're not here to plug for telescope manufacturers, but for someone with a backyard and a decent view can you make a couple of recommendations for a good telescope. In general terms

RM: Well just in general terms, actually, the type of telescope you use is not overly important as far as design or manufacturer. If you look in the book, one of the images is of the telescope that I used for doing the observations in the book. And you won't find a more motley lot anywhere. The telescopes I used for the book range from a 3-inch short-tube to a 12-inch Meade Dobsonian and everything in between. I guess if I had to say anything I'd go back to the urban aperture deal. Choose a telescope that is a minimum of 8-inches in aperture.

The other thing I'd say is don't worry about having a short-focal-length telescope. Short-focal length is fine if it helps you move the telescope around and store it. A short-focal-length telescope will obviously often have a shorter tube than a longer focal-length one. We don't care too much about that in the city. In the city, we tend to not to be able to use low-power and wide-field scopes. At low-power in the city you do get a bright sky background. So do not go out of your way to get a short-focal-length wide-field telescope. One is O.K. One can be used. But one offers no advantage to the city observer. For a city observer, something like an 8-inch F/10 SCT (Schmidt-Cassegrain telescope) for an f/6 Newtonian or an f/8 or f/10 refractor is just fine.

OMA: I would imagine that someone who lives in an apartment, the same advice would apply but the weight issue comes in, right?

RM: That's right. You know, again, you want the largest aperture that you can lug around and that you can store in your apartment. For those people, the trade-off may be that to get larger aperture, they need to go to a compound scope like a Schmidt-Cassegrain or a Maksutov-Cassegrain or something like that. A telescope that incorporates long focal length in a short tube. That's more important than any other advantages. What you're after in the city again is aperture and usability. Enough aperture to see something in a package that you can store and move around.

OMA: Understood. Now how about the mount of the telescope. Is an equatorial mount essential for this city? Or does it matter?

RM: It depends somewhat on your own circumstances. If you have an open backyard and you tend to just remain in one spot and look in one direction, and equatorial mount that can track stars is fine.

For many of us though, and equatorial mount isn't so useable. Many of us have to use three or four different spots in our backyard over the course of the evening. You might be able to go off in one spot and see off to the east, and to see in the south you have to go a little bit farther to

the back of your yard so that a shed is blocking Aunt Matilda's security light, and to see to the north you have to move to another place still.

If that describes your situation, I would not recommend either a German equatorial mount that you want to polar-align and use for go-to computerized operation, or even an altazimuth go-to mount like the moderns SCT's. Both of those are very nice things, but unfortunately if you have to pick up the scope and move it around during the course of the evening to see different areas of the sky or hide yourself from streetlights while you're looking in various parts of the sky, you'll have to stop and realign your telescope every time.

OMA: And you're looking at another 5 or 10 minutes.

RM: Right. And with a manual German mount that's not so bad... you just vaguely point it north. But if you want to use go-to then you have to run through, like you say, five or ten minutes of aligning. Maybe for the average person who has to observe like that, a Dobsonian is best. And maybe not just any Dobsonian, maybe a solid-tube type Dobsonian. One of those can basically be picked up at smaller apertures and waltzed around the backyard. And in larger apertures, maybe in two trips and it doesn't require a lot of alignment or fussing around.

OMA: This is a solid-tube as opposed to a truss-tube type telescope.

RM: Exactly. By a solid-tube I would mean something like the Orion XT telescope from telescope and binocular center here in the U.S. By truss tube we mean the classic obsession telescopes done by Mr. Kriege.

OMA: Or the new Meade Lightbridges, for example.

RM: Right. Or a semi-truss like the Meade Lightbridge. Those are a little bit more difficult to move around without taking apart in the larger sizes.

OMA: So this is interesting. Is that because when you move these telescopes, they come out of alignment?

RM: Well it's not so much that. It's just that they become very awkward. Now if you have a large truss-tube telescope, there are work-arounds. You can put wheel-barrow handles on them and wheel them around the yard. But for the average person who has to move around the yard four or five times in the course of the evening, a 12 or 16-inch truss-tube scope is really a bit much. You might be better off with a 10-inch or even a 12-inch solid tube scope. It's a bit easier to handle. It's not quite as awkward to move about. A 12-inch solid tube scope... you can pick up the tube in your arms like a baby... it's a little heavy but you can carry it around. A 12-inch

truss tube... it's a little bit more iffy to pick it up correctly and move it around without damaging it or yourself. Although certainly either can be done.

OMA: OK. Now you mentioned go-to mounts and go-to telescopes before. They're fairly easy to find these days at a pretty reasonable price. Some purists say that go-to mounts will degrade your observing skills and take away the pleasure of learning your way around the sky. What do you think?

RM: Well they're full of crap with a capital "K". Nothing helps the urban astronomer more than go-to. As I said a moment ago it maybe that if you're continually moving around your property to observe, go-to isn't very practical. But if at all possible, if you can use go-to, do so.

There's a very important reason for that. There are basically two ways to find things, by using go-to or by star hopping. There are other variations too like setting circles and digital setting circles, but today basically it's go-to, digital setting circles (kind of the same thing), and star hopping. Star-hopping is when you use a finder scope or zero-power finder like the Telrad to put objects in your telescope. You use patterns of stars and constellations and asterisms and locate objects that way, and it's fine and it can be a lot of fun if you're out where you can actually see stars. If you're in the city and you're trying to find the Virgo galaxies and you look inside the arms of the maiden, where the realm of the galaxies lies, you won't see any stars hardly at all even with a finder... an optical finder... much less a Telrad. And how are you going to find galaxies if you can't find guide stars and signposts along the way? You can't. Far from making you a worse observer, if you can't ever find anything you will probably be made into no kind of observer at all. Your telescope will go in the closet.

OMA: You just give up.

RM: Go-to makes it possible for the urban observer to actually see stuff. No ifs, ands, or buts about that.

OMA: I was out looking for galaxies in Pegasus last night and one of the few times in my life I though, man, I wish I had a go-to.

RM: Well, you really will in the city where about all you can see is the four stars of the great square. You might see a little more with a 50 mm finder but probably not enough to let you pin down a galaxy when it's been reduced by skyglow and is not quite as obvious in the eyepiece as it normally would be.

You see, here's the thing. If you're star hopping and you don't have many stars to hop to and you look in the field, you may not notice the galaxy. You may not see it and you'll move on. Even if it was in the field. With go-to, if you've got a good go-to telescope that works well and

you are assured that most of the time the target will be in your eyepiece field, you will spend a lot of time looking and hunting in that eyepiece field until that galaxy pops out instead of moving on.

OMA: Alright. Let's talk about binoculars for a second. Now just about every book says how useful binoculars are for astronomy. I've find that binoculars in the city don't show me much except for grey sky. What do you think about using binoculars in the city?

RM: Like a finder, they can be... there's no doubt that they're limited by skyglow. That said, I've used binoculars in the city quite a bit, maybe because I'm kind of lazy. And it has to do with living down here on the Gulf Coast too. You wouldn't believe what summer's like here. It's hot, it's humid, it's hazy, and there's nothing but mosquitoes. If all I could do was take out an 11 or 14-inch SCT to observe, I wouldn't observe all summer long. But right over by the back door there's a table, and on the table is a pair of inexpensive 15x70 binoculars and an Orion Star-Blast 4-inch f/4 Newtonian. All summer long, I use those two and I've seen a lot. I've seen bunches of little comets in both the binoculars and the short-focal-length telescope. Neither one is really optimum for city use... lower powers are not what you really want in the city.

And yet... and yet... if you work at it, even with a pair of binoculars, you will be amazed at what you see in the city. Bottom line... you will see a lot more in the city skies with a pair of binoculars than you will sitting in your chair watching American Idol. End of story.

OMA: (Laughs). Fair enough, fair enough. We've talked about telescopes and binoculars. Now when you've got your telescope set up, do you use it exactly the same way as you would under a dark sky...

RM: Let me add one thing to the binocular story. If you have the choice, in the city, instead of 7x50's get 10x50's or even better 15x70's (and we'll get to that in a minute) but a little bit of magnification really helps in the city... and that kind of falls in line with your next question too: How do you use a telescope in the city?

Well the first thing to notice in the city is that low-power eyepieces look horrible. That is because of the skyglow. And what do you do about that? How do you fight that? Easy. Increase magnification. In the city, we tend, as I said earlier, to use longer focal length telescopes. the reason we do that is because a longer focal-length telescope will give you higher power with a more comfortable eyepiece. An f/10 8-inch telescope will give you a decent magnification of 80x with a 25 mm eyepiece.

Why do you use higher magnification in the city? Contrast with a capital "C". What a higher eyepiece does in the city is spread out the skyglow background...

OMA: So the sky looks darker at higher power.

RM: It darkens the sky a little bit and helps your deep sky objects pop out. For example, you might use a 35 mm eyepiece for hunting objects, for finding objects. In the city you might want to use a 25 mm or a 20 mm eyepiece instead.

And going to higher magnification doesn't necessarily mean you're looking through a peephole anymore. There are 70-degree eyepieces (apparent field of view), 82-degree apparent-field-of-view eyepieces, and now 100-degree apparent-field-of-view eyepieces.

OMA: Yes, from Televue.

RM: And focal length per focal length they will give true field as well and make it easier to find things in the city while keeping your magnification up. I have both Ethos's and I swear by them, although they're not for everybody obviously, they're costly and they're something that longtime and most advance amateurs will be interested in. But you can buy an 82-degree apparent-field-of-view eyepiece for less than \$100.

OMA: They were Naglers and now there are lower cost ones on the market now.

RM: They may not be as good as Naglers, but they can be a big help for city observers. Again, you get fairly high power, but you get fairly high true field of view with one of these eyepieces and it helps objects pop out while giving you a decent swath of sky to help you find it.

OMA: Another obvious accessory of course is as light-pollution filter. You see the magazine ads for how wonderful these filters are for blocking light pollution. As I understand it, there are three kinds of these filters, broadband, medium-band (which filters out more light), and narrow-band line filters that look at a particular spectral line of the object. What's your view? Do these filters help for city observing?

RM: I guess the first thing we ought to talk about is what they won't do. What they will not do. What light-pollution filters (LPR... light-pollution reduction filters) will not do is help with anything but nebulae. They will not help with anything made of stars. That includes stars. That includes open star clusters. That includes globular star clusters. And that includes galaxies. Unfortunately, the light of the stars falls into the same wavelength as earthly light pollution. So if you block out earthly light pollution, as a consequence, you are going to block out the light of stars. That being the case, the only thing a light pollution filter will help on is a nebula. But that's a good thing. Because nebulae are harmed by light pollution more than any other object.

Now there are three kinds of filter you can buy. A broadband filter like the Lumicon Deep-Sky. A medium-band like the Orion Ultra-Block, or a line filter like the Thousand Oaks or Lumicon OIII. You can make it easy on yourself by x-ing out the broadband, the Deep Sky.

OMA: They don't help?

RM: They don't help enough to do pea-turkey for you. Some photographers find that the wide filters help trying to do imaging from the city, some don't. But they don't do enough to improve the contrast to make them worth bothering with for a visual observer. For most visual observers, those who want to start out with one filter, a medium-band filter like the Ultra-Block or the UHC from Lumicon is what you want. Not only do they provide an incredible gain on nebulae, both in the city and out in the country... but gain I mean an increase in contrast; they don't make anything brighter, that can't... they work on many, many objects. An Ultra-Block or UHC filter will work on most nebulae.

Now the next step up is the line filter, the OIII. Those are incredible filters; they have a couple of drawbacks. Some people will say they're very dense filters, they don't work well with small-aperture telescopes. I've actually had fairly good luck with them on small-aperture telescopes. Their main drawback is they don't work with everything. For an OIII filter to work on a nebula, that nebula must be radiating a certain range of frequencies. From doubly-ionized oxygen, the "forbidden lines" in other words. A lot of nebulae radiate those wavelengths and a lot don't. For example, I've never found M42 to be overly improved by the OIII. Many planetary nebulae are helped a whole lot by them. OIII can be an incredible filter on the Veil Nebula. Probably an OIII is best as your second filter.

Then of course you can go to the narrowest line filters like the H-Beta. Mostly those are useable on a few objects like the Horsehead Nebula and the California Nebula, objects that you won't see from the city anyway, filter or no filter, big telescope or no big telescope. So consider an H-Beta only if you want to chase dim ones from dark country skies.

OMA: Have you had any luck with hydrogen-beta filters? With the Horsehead?

RM: Oh yeah. I just got back from a stargaze where it was quite easy to see the background of the Horsehead, (the emission nebula) IC434 with an H-Beta. And with just a little looking "Mr. Horse" popped right out. He didn't look like a horse, but I did see him the weekend before last with direct vision with an H-Beta filter in Chiefland, Florida. But the catch is I was using a 42-inch Dobsonian.

OMA: (Laughs).

RM: But that said, he did look like his pictures with direct vision. No averted vision or imagination was required.

OMA: A 42-inch.

RM: A 42-inch known as “The Beast”.

OMA: Yes, yes, I’ve heard of that telescope.

RM: It rocks!

OMA: I wouldn’t mind having one of those myself, or at least taking a peak through it.

RM: I hope you get a chance one day. It’s worth it.

OMA: I will put that on my to-do list for sure. Now, you mentioned finder scopes before. You mentioned non-magnifying finders like the Telrad or the red-dots. A lot of telescopes come with those these days. Are they of much use in the city?

RM: Yes and no. If you’re like me, all you use your bloomin’ finder for is to find alignment stars for using your go-to mount or your digital setting circles. But that’s a worthy question. Like I said earlier, if you don’t or can’t use go-to or digital setting circles, maybe because you have to move the scope around all the time, that’s a valid question. A Telrad or a red-dot sight is not of much use in the city. For the same reason star-hopping’s hard. If you can’t see many stars with the naked eye, you won’t see many stars in your Telrad or zero-power finder. They don’t gather any more light than what your eye gathers with its tiny lens.

In those cases, you want a minimum of a 50 mm optical finder. In the city, that, as I said, can still be very limiting in certain places if the light pollution is so bad you still can’t see many stars even with a 50 mm finder. That’s true in many locations. But one is a darned sight better than a Telrad in those conditions.

OMA: So your finder like your telescope... it’s the same story. More aperture will help.

RM: More aperture is better. If you want to or you have to star hop, a 50 mm finder is good, an 80 mm finder is better. Of course, you have to balance that off because you want to have a nice wide field too.

OMA: You don’t want too much magnification or you’re looking through a peep-hole again.

RM: Right. You’ll have to have a finder for the finder then.

OMA: So when you plan an observing run, each night, do you use a particular kind of star map or software package to plan urban observing?

RM: Well, in the old days, what I would do was I would grab Burnham's Celestial Handbook or the latest column by Scotty Houston and a copy of Sky Atlas 2000 and make out a list of objects I wanted to see. And that worked out pretty well. The important thing is having a list. If you just trot your telescope out into the "back 40" without an idea of what to look at you won't look at much. You'll come right back in.

That said, these days I have computerized, and there are three programs I use. I couldn't recommend one over the other. Deep Sky, Sky Tools, and Astro Planner. All three of those are basically the same thing. They're very huge databases with charting features as well and a lot of other stuff. Their value is that you can tell them, "Make me a list of all the galaxies in Virgo with magnitude 10 and higher than 30-degrees in the sky at 9 p.m. on April 1", and it will spit a list right out. That is really the only way to fly. Like I said, most of these programs will do fairly good charts or will interface with other charting programs too, if you have to find things the old fashioned way. If you're lazy like I am, you'll just take your laptop into the backyard, plug it into the telescope, bring up your observing list, click on the first item in your observing list and send the telescope there.

But the bottom line is, you need an observing list and the easy way to do it is with one of those programs Deep Sky, Sky Tools, or Astro Planner. They're all very inexpensive and they can do more to keep you interested than many other things. Any one of those programs will have a database of 100,000+ objects. You'll never run out of things to see and it makes it so easy to find things to look at that will be in a good spot and bright enough for you to see in the city.

OMA: O.K. So these are a little bit different than a "planetarium-type" software package like Stellarium or Starry Night.

RM: Well a lot of them like I said include planetarium elements. But that's not the main thrust. The main thrust is that it's a big searchable database where you can search for galaxies brighter than magnitude 10 that are higher than 30-degrees in altitude right now, or at 10 p.m. tonight, and that are visible from your location. So they're like astronomical databases that help you build a list of things that will be visible to you and your telescope at any given moment.

OMA: All right. Now... O.K. that's great information. Now when you're out with your telescope, one thing that I've found when I've got my list in hand, I've got my high-power eyepiece, I've got my telescope... I find something that drives me crazy is that it's hard to get away from streetlights or a neighbor's floodlights in the backyard. Have you got any tips to help keep those lights out of your eyes?

RM: Well, you know, you have to be creative. In some cases, it may be like I said, when you're observing a certain part of the sky, all you have to do is get in the lee of a shed and lots of light is blocked out.

As I alluded to earlier, the biggest hindrance to seeing things in the city is not skyglow. I hear people say, "Well in my city, the dimmest star I can see is magnitude 2." Yada, yada, yada. That's a bunch of bull hockey, usually. Usually what's happened is there's nearby ambient light sources. Light in the immediate area that are shining right into your face that keep your pupils constricted, that keep you from achieving any dark adaptation. You can see a lot in the city sky even with skyglow if you can obtain a modicum of dark adaptation.

Now there are various ways to do that. You can go from the simple, like a dark hood, or an eye patch, things that keep the light out of your observing eye except when your eye is at the eye-piece. Or you can get fancier. If you have a detached house with a nice secure backyard, you might consider an observatory. As I say in the book, a lot of my country friends think it's fun that you'd want to have an observatory in an urban backyard. But actually, one of the main benefits of an observatory is more of a benefit in the city. It keeps you blocked from light, wind, and things like that.

Failing that, you just have to be creative. In the book, I have a section and some photographs and some figures on some light shields I made. I went to a play at our local university theatre group, Theatre U.S.A., and while I was just waiting for the play to begin with Miss Dorothy, I looked at the stage flats. Now they're canvas-covered frames of wood. I started thinking, well, in addition to stage scenery, a stage flat would make a good light shield. So I went down to the lumberyard and got some 1x4's and I went to the fabric store and I got some cheap muslin, and some black paint and I made a stage flat or two to block the light from my observing location in the backyard and they worked wonders.

The nice thing about the stage flat ideas is that they're light and easy to move around. When I move around the yard, I could move my stage flats. When I moved my scope to a different part of the sky, I could move the flat to block this light or that light.

But you know, anything will work. A tarp hung up on a clothes line or something like that. Or a ladder with a piece of poster stapled to the top of it. Just anything you can devise to put you in a shadow.

But again, the important thing again is to block urban ambient light sources. Because ambient light sources do more than anything else to keep you from seeing "stuff".

OMA: If you're looking at a light, it's going to constrict your pupils, and you're out of luck.

RM: That's right. You will never get dark adaptation. And I think you'd be surprised even from the worst light-polluted city what you can see if your eyes are dark adapted and you're only just dealing with the urban skyglow.

OMA: O.K. Well let's talk about some of the things you can see from the city. Now of course many beginners want to tackle the moon and the planets, Jupiter and Saturn especially, and they make good targets from the city. But what kind of deep sky objects look good? You mentioned you can see the whole Messier list.

RM: Indeed you can, but before we leave the subject of moon and planets, what many people don't know is not only can you see the moon and planets from the city but also they look better from the city.

OMA: Why is that?

RM: Often the air above a city, for a variety of reasons... heat signature and other things... is more stable than it is out in the country.

But yes, you can see the entire Messier. Now when I say you can see the entire Messier, I don't mean you don't have to work at it! If you're going after something like the "Ghost Galaxy", M74, you are going to wait until your skies are the very best, until a cold front has passed through. Wait until M74 is as high in the sky as it will get, that is, when it's at culmination. Etc. etc. It may take you weeks to see M74, and when you see M74 all you may see is the core. But you will at least have the satisfaction of saying, "I did it!" And by struggling to see M74, you have improved your observing skills so much that you will see a lot more in M74 when you get to dark skies than you otherwise would have.

But continuing on the subject of what you can see... not everything is hard. Open star clusters in particular aren't hurt very much at all by city light pollution. Or at least they are not harmed as much as a nebula or a galaxy.

Double stars are always easy.

Globular clusters are fairly easy, especially the bright showpieces. A 12-inch telescope will show up an M13, or an M15, or an M2, for just what it is... a big ball of stars. You won't find it looking as good, naturally, as you would in the dark country, but still it will look darned good.

OMA: Now what kind of object, conversely, is too hard to see from the city, or is very challenging?

RM: The challenge objects from the city are the “challenge nebulae”. Even with a light pollution filter, as I said... something like the Horsehead... don’t waste your time.

However, brighter nebulae, like of course, the Orion Nebula, the Trifid Nebula, nebula in that class are easy. We’re speaking of diffuse nebulae.

Now conversely, many planetary nebulae except the largest ones, are very easy in the city. M57, the Ring Nebula; the Blue Snowball that’s obvious in Andromeda are hardly hurt at all by light pollution, and also respond very very well to light pollution filters.

So galaxies... how about galaxies? Galaxies are easily visible. You can see scads of galaxies. The drawback is that you’re not going to see the delicate spiral arms that you’re going to see from the country. Even a fairly bright galaxy like M51, the Whirlpool, you’re just going to see two cores instead of M51 and its companion. But on the other hand as I said you can say you saw it, and on some really good nights maybe you can see some detail. And again, you will be a better observer.

Plus don’t count anything out. Many times I have trotted out into the backyard here with a 12-inch telescope and wound up seeing a supernova near the core of a dim NGC galaxy because someone called up and wondered if I could see it with my horrible skies, and I took on the challenge. I guess that’s the number-one thing in urban astronomy, and the number-one thing in astronomy altogether... there’s no sure way of being proven wrong than to say some observation is “impossible”. You never know until you try.

OMA: So two miles from downtown Mobile you saw a supernova in another galaxy?

RM: Oh, heck yeah!

OMA: Fantastic!

RM: But, I turned off the TV, got off my butt, and went out back with my telescope. That’s the main factor there. You have to not just observe. You have to make observing a habit.

I think William Herschel, arguably the greatest amateur astronomer of all time, had it best. I don’t have the exact quote, but he likened observing to playing music...

OMA: Yes, yes...

RM: How good a musician would you be if you one a month? Not very good! How good an amateur astronomer, or professional astronomer, would you be... or telescope operator, or anyone else who has to observe the night sky... if you only did that one time a month?

OMA: Exactly.

RM: If you get out in your backyard every night and try to see the “Black Eye” in M64 and finally see a trace of it, you’re going to be, again, a heck of a better observer when you do get out to where the skies are really good. If you get out in your backyard all the time and keep in practice, there’s less chance you’re going to be completely clueless when you do get out to the Texas Star Party or somewhere really good.

OMA: Right, right. You’ll know how to find things and how to look for things.

RM: And how to look for things, and how to look at things.

OMA: Exactly, exactly. So if you were told tomorrow night is your last night on Earth and you could go out with your chosen telescope. From your backyard, what would be your favorite one or two or three objects you’d like to look at?

RM: That would be like saying, “What are your one or two favorite members of your family”? I’ve been observing the night sky seriously since 1965 and the stars and the planets and the moon and the deep-sky objects are my friends. I mean my wife just finds it amusing that I’ll be talking about some distant galaxy as if it’s a little buddy of mine, a little playmate, positively chuckling over it.

But if I just say, what things would I want to look at before I leave this plane, I keep coming back to the Moon. The Moon has been a source of enduring interest for me. Jupiter. Jupiter has been a source of enduring interest for me. And then the Messier objects, and especially... I don’t have to name them... they trip off every amateur astronomer’s tongue: M42, and M13, and M7, and M8, and M15 and M2, and M31. I think those 110 objects... those 110 friends of mine... plus our Sun’s little family... I would do my damndest to see as many of that bunch as I could before I left.

I guess at this time of the year (editor’s note: November), if you were to pin me down, what would be the one thing I would look at, it would be the Great Orion Nebula, M42.

OMA: It’s a beauty!

RM: I spent last night from a truly dark sight observing it with a 13 mm and 8 mm Ethos eyepiece. Looking at it, looking at the countless tiny stars embedded in these tendrils of gas. Looking at the space of dark nebula between M42 and M43 and I’ve got my iPod on and all of a sudden on the iPod comes Enya with her song “To Paint the Sky With Stars”. And I almost fell off my observing ladder, bud!

OMA: Fantastic! That is fantastic.

RM: Well, it ought to tell you something that I can still retain that enthusiasm after 40 years. And the only secret to maintaining your enthusiasm is to get out there and do it!

OMA: Yes. Well you touched on something... I feel that same way and many observers who have been doing this for a while feel that same way too... it's that these objects are your friends and no matter what goes on in your life and what changes you endure, or even where you move to, they are still there and they are a source of endless wonder and comfort, in a way too.

RM: Yeah, and that's a very good observation, because we know... and my hat is working on the professional end, teaching astronomy, and I know the heavens are not changeless, but for creatures such as ourselves just looking up with our eyes, they appear to be. I know that no matter what bad or silly things might happen, I know that, come spring, Virgo will be rising up with her forest of galaxies and shortly behind her will be old Hercules with the "Great Glob", and on and on and on, year after year after year. And if I didn't get my fill of M42, he'll still be back next year.

OMA: And they all beat the heck out of American Idol.

RM: You're darned right!

OMA: Rod, I appreciate this. There aren't many who specialize in "urban observing" so it's great to hear all these tips and tricks, especially from someone who wrote the "bible" of urban observing...

RM: Well that's very kind of you to say so, Brian, and it's especially kind of you to say that I specialize in anything, because I've never been able to buckle down and specialize in anything in astronomy. You'll never find me dedicating my life to asteroid photometry. That's maybe why I enjoy teaching beginning astronomy students in my labs, in that we can cover a little bit of everything.

And maybe that's the thing that's kept astronomy fresh for me. I love trying to challenge the heavens in the urban backyard, but I don't mind getting out to a dark site with a big Dob either.

OMA: Absolutely.

RM: But anyway, I genuinely appreciate you giving me the opportunity to talk to your, I don't know what would you call them, listeners? Web viewers? Whatever they are... thanks a lot!

OMA: Subscribers. Friends!

Well I'll say your book, *The Urban Astronomer's Guide*, has been an inspiration for me over the last few years. And it certainly keeps me away from the T.V. and gets me outside.

RM: Well, and that's what I like to hear, and that's what keeps me writing them, and I'm not going to get off without plugging my new one either, if you thought I was...

OMA: What have you got in the works?

RM: What I've got coming out... the last book I wrote on Schmidt-Cassegrain and catadioptric telescopes is now nearing ten years old, so in November, I'm coming out with a book... again, from Patrick Moore's Practical Astronomy Series, *Choosing and Using a New Cat* that covers all the go-to telescopes currently on the market, all the modern telescopes. And while the "Urban" book does have a pretty good section on telescope choice, in this book, because it is just about telescopes, albeit just about compound catadioptric telescopes I can go into a lot more detail. And that's due out in November (2008).

OMA: O.K. So these...

RM: Hey, it is November!

OMA: It is, November 2nd. And so these are SCT's and Mak's also?

RM: SCT's, MCT's, KZT's (you'll have to buy the book to find out what that is), and everything in between. Any telescope that uses and lens and a mirror that is for sale to amateur astronomers is in "The Book".

OMA: And the title again is?

RM: *Choosing and Using a New Cat*.

OMA: O.K. And that's by Springer-Verlag (the publisher).

RM: Springer-Verlag, Patrick Moore's Practical Astronomy Series. They've been very, very good to me.

OMA: Yes... it's a wonderful series too. And you maintain a blog also, and a website. Can you give us the URL?

RM: Yes. All you have to do is to go to my main website <http://skywatch.brainiac.com/astroland/>. And "brainiac" is just like Superman's old foe: B-R-A-I-

N-I-A-C. And there's "http" in front of all that, and they'll be a selection for my blog at the top of the page, or if you want to make life easy on yourself, just go to the website that's a lot of people's favorite, CloudyNights.com. They syndicate my blog regularly and you can read it there and they probably do a better job formatting it there than I do, and you can also get on their message boards and give me your slings and arrows or kudos about the current blog entry to your heart's content and discuss it and whatever.

OMA: O.K. Great.

RM: So <http://skywatch.brainiac.com/astroland/>, or <http://www.cloudynights.com> where you can read The Astroblog.

OMA: Absolutely. Anyone listening who's not familiar with Rod's work already, I encourage you to check out these websites and books. They're uniquely entertaining and extremely useful.

Rod, it was great speaking with you. I really enjoyed it. And thanks very much for doing this.

RM: Ah, anytime, and best wishes and good observing to you and your many subscribers, Brian. Thanks a lot.

OMA: Thanks very much.