Sunrise Herald

March 2012

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Golden Spike Awards Ceremony Was February Highlight

Rich Flammini, John Kerbaugh, and Stewart Jones (pictured from top) were the proud recipients of the NMRA Golden Spike Award. Regional Chair Jim Laird did the honors as Sunrise's AP Chair, David Bol, could not be present.

To see if you qualify, contact David or Jim at the next meeting. or check www.nmra.org/education/achievement/gold.html **–SH**

In The Herald

Membership Report

GARY MYERS – ACTING MEMBERSHIP CHAIR
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New Members

This month the Sunrise Division would like to welcome new members Charles Horner of Commerce City and Ed Doorgeest of Parker. Last month, with a storm coming in, we managed to have 22 members in attendance. In addition to our regular attendees, Mike Farnsworth found us from a web search and was able to join us, despite the weather.

Member Unit Train

According to the Region, the Sunrise Division train is at ninety members. I had an additional confirmation of a renewal to make it unofficially ninety-one members—down 1 from last month's unofficial total. Since Scott Perry's membership report was published, I decided to keep close track and understand exactly where we stand on number of members. So far, the membership has stayed stable, with new memberships offsetting those who did not renew, relocated out of the area, or have passed away.

Sunrise Searchlight Car

This month we shine our searchlight on Parker, Colorado. We have quite a few members (twenty) located around Parker. If you know each other, some carpooling may ease the driving. Seen any of these guys? Be on the lookout for:

David Bradford
Roger Hanson
John Kullman
Tom Ludlow
Roger Neuscheler
Greg Sheehan
Larry White

Goings On and Shenanigans

Speaking of Colorado weather, Dave Cochrun and Kathy Sparks have gone south and are now sailing the warm waters of the Gulf, leaving many of us CRAP (Castle Rock & Pacific) operators up here in the cold—literally.

Rails in the Rockies

Rich Flammini was up manning the NMRA booth, selling the NMRA as always, and talking with many new prospective members. The next show will be the TCA at the Denver Merchandise Mart on March 3-4, and I know Rich is looking for some help and a couple more clinicians. Please help out if you can.

I also saw Frank Germo with those tiny N-scale modules. He seems to be at every show, and I'm sure he will be at TCA as well. As usual, Kurt and Chris had a large booth for Wolf Designs and seemed to be doing pretty well with the large crowd on Saturday. I had a nice visit with Al Hovey, who was up from Albuquerque promoting the 2013 convention. Duncan Harvey and a bunch from South Suburban were on hand again with their new narrow gauge modules. And, of course, Jack Sousa was there with the Company Store; he twisted my arm until I finally had to buy something. A great show with a lot of NMRA folks in attendance including the Estes Park Division who hosted. –SH

Don't Delay!

June 8 is coming faster than you can imagine, and you don't want to miss your chance to catch a ride on the Big Horn Mixed chartered mixed freight/passenger train on the Cumbres & Toltec Scenic Railroad.

For more information and a registration form go to http://www.bighornmixed.com –SH

Division Data

Sunrise Division promotes and encourages model railroading from I-25 east to the Kansas border. We welcome all model railroaders, regardless of skill or experience, because our goal is to have fun.

The *Sunrise Herald* is a publication of the Sunrise Division of the Rocky Mountain Region, National Model Railroad Association.

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From The Chief

BY GARY MYERS, DIVISION SUPERINTENDENT

Didja Ever.....?

Didja ever ride in the cupola of a caboose while the train was rolling along the track, looking out the window, a view of the world from one of the most iconic seats in American folklore?

Didja ever experience the humor and wisdom of Charlie Getz firsthand. Charlie Getz is the Assistant Attorney General of the great State of California, and he also is the next President of the NMRA in 2012. For over twenty-five years Charlie has written a regular column called the Narrow Gauge Scene for the Narrow Gauge and Short Line Gazette. As our featured guest speaker at the 2007 Timeless Rails convention in Aurora, Charlie had us rolling with laughter with his charm and wit.

Didja ever have the freedom — and permission — to freely walk around a working rail yard where locomotives are being serviced, switching cars, and basically operating? At the Cumbres & Toltec Scenic Railroad you can still do this, but maybe not much longer. Patrons of the Durango & Silverton are well aware of the strict no–access to the yard and very limited public access for tours and facilities. The Cumbres & Toltec Scenic Railroad is publicly owned, and access for rail fans has been incredible. Patrons have been permitted to walk freely anywhere they want — except private property or where marked. With the new management company that has assumed control of the railroad starting this year, it is feared that the charm of the accessibility of this railroad may soon be going away with future restrictions, especially once the new management gets to experience how much the public swarms the rail yard. If you haven't walked around the Chama or Antonito yards, you will not believe how accessible a railroad really can be. Imagine being at the Colorado Railroad Museum, except several locomotives and cars are moving, cars are being worked on, shops are active, and real work is constantly being done.

Didja ever get a chance to ride one of Colorado's narrow gauge trains, stop the train, get off, have them back up and roll by a few times so you could take a photo with steam blasting out and the whistle blowing? How many photo opportunities did you get without any tourists and rail fans standing in your photo? How many photos of a narrow gauge freight train without passenger cars in view?

Didja ever ride the Cumbres & Toltec Scenic Railroad? The train ride lasts all day and is a great experience. If you took a normal trip, you would have several options. Because the ride is all day, many ride to Osier for lunch, and return to Chama but miss seeing the scenic Toltec Gorge. Others ride the train on to see the Gorge and beyond Osier, but the final third of the ride to Antonito is open, flat, high prairie without much interest. Following the full trip to Antonito is a return bus ride to Chama. Currently, the cheap seats for this ride are $91 in coach — subject to change.

Now's Yer Chance.....

But you don't have to take a "normal" trip. For $140 you get your convention registration, train ride seat, lunch and two snacks, drinks, and all that mentioned above. If you get your registration in soon, you'll get a shot at that caboose cupola seat for a portion of the ride. The 89 mile roundtrip ride starts in Chama, goes past Osier, through the Toltec Gorge and turns at the Big Horn wye for the return. There won't be a bus in sight. There may not be great opportunities like this around for much longer, so don't keep putting off something you've always wanted to do before it is too late. Join us for the 2012 Rocky Mountain Region Big Horn Mixed Convention, June 8-10, at Chama New Mexico.

For registration information, go to http://www.bighornmixed.com.

NMRA Notes

- After a necessarily short search by the NMRA Canada Nominating Committee, Clark Kooning volunteered for an appointment as NMRA Canada Director when Don Hillman stepped down from the job for health reasons. We wish Don all the best, and thank Clark for his willingness to serve at the last minute.
- Financially, the NMRA ended 2011 in very good standing and is currently rebuilding some of its funds from which it had borrowed in the past. In addition there is currently enough money in the budget to hire an IT professional to repair, maintain, and update the NMRA website.
- The NMRA has announced an agreement of cooperation between itself and the Hasea.com Model Railroad Association (HRMA) of China, a community of over 100,000 railfans and model railroaders. The HRMA, a relatively young organization, is interested in learning how the NMRA is organized, and will promote NMRA standards in China. Members of both organizations will be able to enjoy the many benefits of each. A press release and story will appear shortly in NMRA Magazine.
- The Board is in the initial stages of studying electronic balloting as a way of both saving on postage and encouraging additional member participation. **–SH**

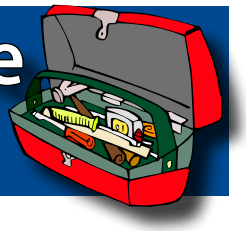
Winter Run

Tim Harkey gets an opportunity to photograph prototype equipment that most of us will never have. After all, he is an engineer for the Burlington Northern Santa Fe. Tim took the photograph above on a cold day this winter in Fowler, Colorado.

Tim has been sending several photographs, and next month we will publish a collection of his work. I think you will enjoy his work, including one titled "Crack of Dawn." Personally, I think that time of day is a figment of his imagination.

(Photo by Tim Harkey)

Tool Time Tips



Keeping your wheels clean was the topic of February's Tool Time Tips. Bill "Sparky" Johnson demonstrated a simple technique to clean diesel and steam locomotive wheels that was fast and easy.

Bill "I'll Model In Any Scale" Johnson began by pouring a little isopropyl alcohol on a rag, then laid the rag across powered rails. He then carefully placed the locomotive so that half of the wheels were on the rag and the other half made contact with the rails. While holding the locomotive, he turned up the throttle so that the wheels on the locomotive started to turn. The wheels on the rag were soon clean, and Bill "I Need Another Passenger Car" Johnson then switched the engine around so that the previously cleaned wheels were now on the rails and the wheels that had not been cleaned were on the rag. Thank you, Bill "It's Got To Be Handlaid" Johnson for a great Tool Time segment. **-SH**

Show & Tell

Engines, especially steam locomotives, require significant support facilities. This month's Show & Tell's theme allowed members to feature the engine servicing facilities they had modelled.

The Caboose Hobbies gift certificate drawing was won by Steve Schweighofer. –SH

Top: Don Francis is proud of the weathering on this model, his first—a 1968 Revell engine house. He only wishes he could remember how he did it. **Above left:** Steve Schweighofer's scratch-built N-scale engine house is the largest model he ever brought to S&T. **Above right:** Kits from the 1950s and 1970s were brought by Dick Hunter, along with his Brake Shop Accident **below.**

More Show & Tell Made February Appearance

Right: It is a little difficult to bring in an entire section of a layout for Show & Tell, and John Kerbaugh's answer tied directly in with the clinic for the night: he brought in a photograph of his engine servicing facility.

Below: John Griffith's engine house has been customized with a crane. It is also strong. When John recently moved, he was unpacking a box and found this model under two VCRs.

(Photo on right by John Kerbaugh. All other Show & Tell photos by Tom Frerichs.)

3 Deadly Sins Of Layout Photography

. . . and how to avoid them

BY TOM FRERICHS

Never one to throw away material, this article is a reworking of part of the clinic I presented in February 2012. It is focused on taking photographs of your layout using a point-and-shoot camera and minimal equipment. Pursuant to Bill Johnson's request, it includes more pictures.

Photography and model railroading seem to go together: they both satisfy a need to express creativity, and both can become technically absorbing. And let's be honest. The first thing most modelers want to do after creating a beautiful layout is to share their work. As it is difficult to carry a layout in a hip pocket, let alone post it on Facebook, photography becomes our way to share our work. Unfortunately, a proficient model railroader may not be the best photographer. The techniques described in this article are aimed towards improving the results of the beginning photographer using a point-and-shoot camera and other simple (and cheap) equipment.

What are the three deadly sins?

They really are not "deadly;" they will not condemn the modeler to the sixth circle of Hell. Instead, the three deadly sins make a viewer look at a photograph and say, "Ah ha! It's a model." They stand in the way of appreciating your work.

What are the sins?

- Insufficient depth of field
- Incredible view point
- Improbable lighting

The photograph at the top of the page is a sterling example of all three. The foreground and background are both out of focus; that is insufficient depth of field. Although not as bad as some photos which could only be taken from a helicopter, the view point is high. The photographer must be looking through a window of a grain elevator. Certainly, he is not on the ground, and that is an incredible or at least unusual place to take a photograph. Finally, notice how the lighting is bright nearby, but looks as though twilight reigns in the distance? That is improbable lighting. You would never see that in a photograph of a real scene.

Together we will look at fixing each of these issues, and at the end of each section is a specific list of suggestions. The technical explanation comes first; the application follows.

Let me add a couple warnings. The explanations are general; the technical geek can easily find situations where what I say is wrong. For example, in the world of macro-photography—the image is at least as large if not larger than the subject—many of the rules about lighting and depth of field go out the window. However, what I have written is correct for the modeler taking photographs of his layout.

When I say "sensor" I mean the light sensitive sensor found in a digital camera. However, these techniques apply equally well to film. I will use the word "sensor" to apply to both film and digital cameras.

Why are there only three deadly sins? Since our model world is scaled down, it seemed appropriate to scale that number as well.

Insufficient depth of field

Let's begin by describing depth of field, and heed this warning: this is the most geeky part of the article.

When you focus your camera on a subject, there is only one distance from the camera that is truly "in focus." Let's call that distance the focus plane. Everything else in front and behind the focus plane will be blurry; and the further from the focus plane an object is, the less blurrier it will be.

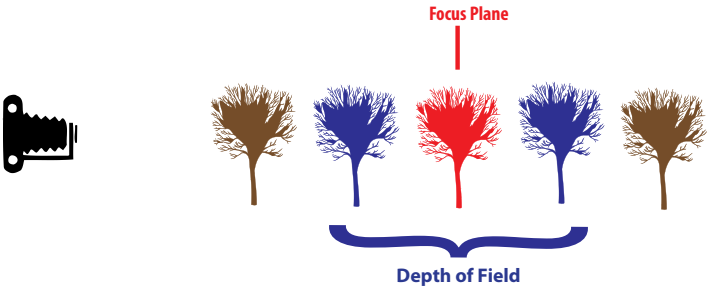


Figure 1. If you focused on the red tree, with a sufficient depth of field the blue trees would still appear in focus. The brown trees would look blurry because they are outside the depth of field.

It is important to know that you do not see with your eyes. You see with your brain, and your eyes only supply the input. The miracle of human vision is made possible by that wonderful computer between your ears. Your eyes are really pretty lousy optical instruments.

When we say a photograph looks sharp, it is the brain judging the edges between objects. Narrow, contrasting edges look sharp; soft edges look blurry. In fact, when you increase sharpening in your camera or sharpen a photograph with your computer, you are actually increasing the contrast of the edges.

This edge detection process, while it is done in your brain, begins with your eyes; and, as I said, your eyes do not have the best optics. There is a point where the blurriness is so small that you cannot differentiate between something that is in focus and something that is *almost* in focus.

There is a range in front and behind the focus plane where something in your photograph is close enough to being in focus that you cannot tell that it is out of focus. That range is called the depth of field. Everything in the depth of field will look sharp.

When discussing depth of field there are a number of impressive formulas and fancy phrases, such as "normal viewing distance" and "the circle of confusion," that seduce the photographer, but you do not need to know them. Instead, you need to concentrate on this: you want the greatest depth of field possible. You want the foreground and the background to look in focus in most of your model photographs because that mimics what you would see if the photograph were taken of a full-sized subject.

The depth of field rules

Among the things that affect the depth of field are two that influence model photography the most. They are camera to subject distance and aperture.

Here is the first rule about depth of field: with everything else being equal, the closer the camera is to the subject, the smaller the depth of field. For example, if the camera were focused on something ten feet away, the depth of field at one aperture setting would be from eight feet to fifteen feet. That means anything in the range of eight feet from the camera to fifteen feet away would look sharp. Thus the depth of field would be seven feet.

What hurts when we photograph a layout is that if, with everything else the same, the camera were focused on something ten inches away the depth of field would be 9.8 to 10.2 inches for a range of 0.4 inches. Going from a range of seven feet to a range of 0.4 inches hurts.

The figures that I just gave were from an online depth of field calculator and are *very* conservative. What is important for you to remember is that your depth of field when photographing models is very small so you must do all that you can to maximize it. Do not worry about exact numbers; concentrate instead on increasing depth of field.

The aperture: the dreaded *f*/stop

The lens on your camera not only focuses the image on the sensor, it also controls the amount of light that reaches the sensor. This control is done by the aperture, which is a set of blades in the lens that can be opened or closed to any amount. If you look at *Figure 2*

What is the exposure?

Imagine a bucket under a water spigot. If you turn the spigot on all the way, it will not take long to fill the bucket. If you just barely turn on the water, it would take a long time to fill the bucket. Your camera acts almost the same way, except instead of water it uses light.

The sensor of your camera requires a certain intensity of light for a certain length of time to record the photograph. The sensitivity of the sensor—the "size of the bucket"—is called its ISO. The higher the ISO, the less light is necessary to make an exposure.

The shutter speed is how long we let light reach the sensor. It is measured in seconds or, more commonly, in fractions of a second.

The aperture controls how much light reaches the sensor. It is measured as an *f*/stop, such as *f*/5.6 or *f*/16. The higher the *f*/stop, the less light passes through the lens.

Which exposure is "correct?"

If we were concerned only with getting the right amount of light on the sensor, there are many different settings that would be "correct." For example, if one combination of shutter speed and aperture gave us a good exposure, then we could double the time we left the shutter open and halve the amount of light passing through the lens to end up with the same exposure. In either case, the "bucket" is filled to the top.

So which setting is correct? If you set your camera to be fully automatic, designers built in logic resulting in a reasonable choice. It is a compromise that fits most conditions.

However, as you have seen, we may want to override that choice. For example, on automatic your camera will rarely chose a very small aperture because the shutter speed would be so long that the picture would probably be blurred due to camera movement. The camera does not know you have it firmly mounted on a tripod. In that case, you need to override the automatic settings to select your own "correct" exposure.

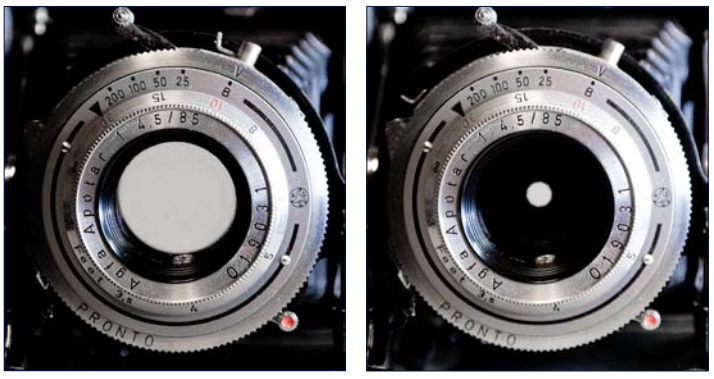
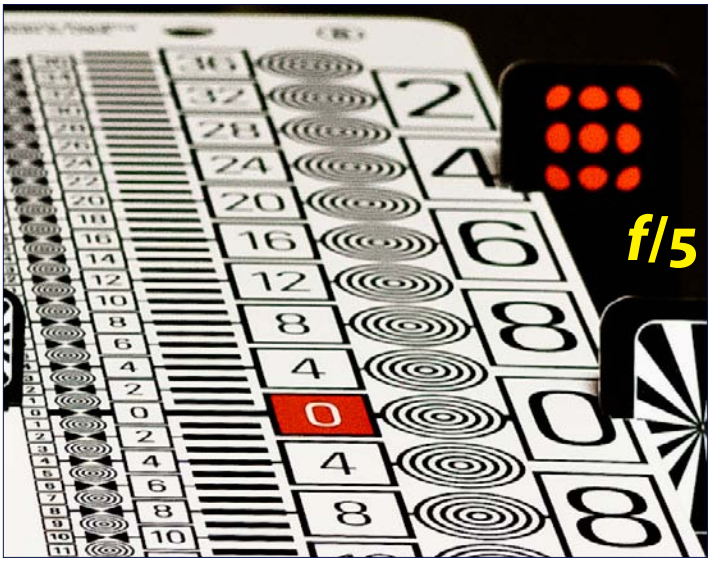


Figure 2. Two different apertures are shown in the photograph. The one on the left is f/4.5 and the one on the right is f/22. The smaller the opening the bigger the f/stop number. The bigger the f/stop number the less light will pass through the lens and the greater the depth of field.

you can see the aperture of a lens from an old camera. On the left, the aperture is set to *f*/4.5; the setting is *f*/22 on the right. As you might expect, the setting on the left allows considerably more light to pass through the lens.

Not only does the aperture affect the amount of light passing through the lens, it also has a significant impact on the depth of field.

In *Figure 3* the camera was focused on the zero of the ruler. One photo was taken with the aperture set to *f*/5 and the other with the aperture set to *f*/16. You can see that the area at the far end is much sharper when the aperture is set to a higher number. This is the second rule we need to know about depth of field: the smaller the aperture (the higher the *f*/stop) the greater the depth of field.



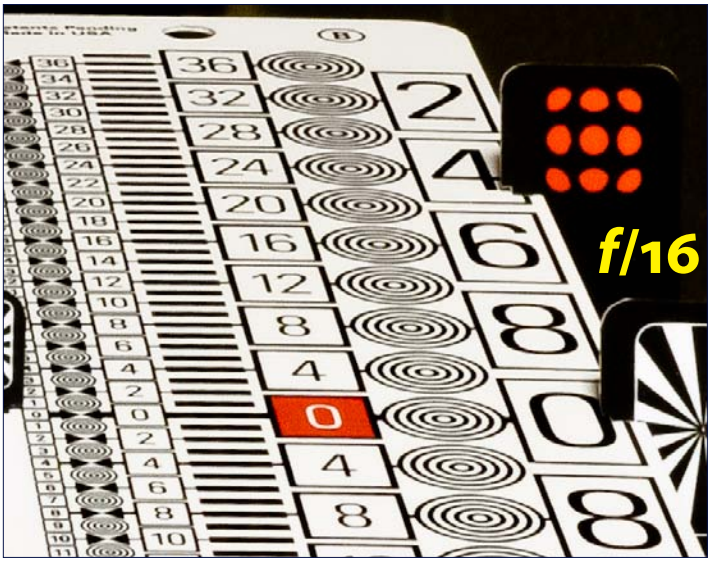


Figure 3. The small picture shows a lens alignment device. The ruler on the right hand side is at a 20⁰ angle. The two pictures above were taken at the same distance from the ruler and show the effect of different f/stops on depth of field. Notice that the far end (around the 36 number) is very out of focus at f/5, but still looks sharp at f/16.

You may be wondering why a smaller aperture should have a higher *f*/stop. The clue is in how the number is written. The value is calculated by dividing the effective focal length of the lens, which is abbreviated as an italic *f*, by the effective diameter of the hole or the "stop." For example, if you had a lens with a focal length of 55 mm and the aperture was 5 mm in diameter, the *f*/stop would be 55/5 or *f*/11. As the diameter is in the bottom of the fraction, the smaller the diameter, the bigger the resulting number.

To get the most depth of field, you need to set your camera to the highest *f*/stop that you can. There is one problem, though. If you do that in the poor light often found in indoor photography, your shutter speed will be very, very slow, possibly on the order of one or two seconds. You will not be able to hand–hold your camera and avoid camera motion blur with such a slow shutter speed. You will need to use a tripod or in some way ensure that your camera is rock steady. For example, you could rest your camera on the rails—be sure to slip a piece of paper under the camera to insulate it from the rails—to make sure it does not move when you take the picture.

How do you manually set your *f*/stop? Here I must refer you to your camera's manual; each camera is different. On most mid-range and above point–and–shoot digital cameras you will probably need to go into the setup menu to allow you to set the aperture manually. Look for "auto aperture" or "aperture priority." Once that is done, you should be able to set the aperture using one of the controls, such as the "joystick" control, on the back of the camera. In this mode, when you set the aperture, the camera will automatically adjust the shutter speed (and possibly the ISO) to get a correct exposure.

There is one other issue: diffraction. Without getting into horrible technical details, smaller apertures can cause the entire picture to be a bit blurry. The higher the *f*/stop, the more the impact. You can see that in the picture shot at *f*/16 in *Figure 3*. Although we have a much greater depth of field, the entire picture is just a bit less sharp than the well–focused area of the picture taken with the larger aperture. However, in a layout picture it is probably better to ignore diffraction effects and get increased depth of field. It is always better to get the shot.

There is an advanced technique used to get greater depth of field called "focus stacking." The photographer takes a series of pictures of the same scene, but focused at different points. Then using a computer program, such as Photoshop or Helicon Focus, he automatically merges all of these photographs into one shot. The program uses only the portions of each individual picture that are in focus to create the composite result.

Recommendations for depth of field

- Read your camera manual and learn how to set the aperture manually.
- Mount your camera on a tripod or in some other way ensure that it is steady.
- Compose your picture, and set the aperture to the highest *f*/stop possible.

- Check your photograph for evidence of blurring caused by camera movement.
- Carefully check your photograph for sharpness to ensure you have enough depth of field. If necessary, re-compose your photograph to limit what is in the picture to what is sharp.
- You *can* have either the foreground or the background out of focus. You should ***never*** have both foreground and background out of focus.

Make it a point to get the right view

Before I get into this topic too deeply, let me draw a distinction. There are photographs that illustrate a modeling technique or track layout; there are also photographs that attempt to show a scene as if it were full–scale instead of a model. In the first case, your point-of-view is determined by how best to clearly show your subject. In the second case, you are trying to mimic reality, and in this article I am concentrating on the latter.

If you photograph scale models, shouldn't your photographer be scale–sized as well? As silly as that sounds, one trick will improve your layout photography: imagine that your scaled-down photographer is stuck on the front of your lens with his eyes right in the center. There are two variables to consider: how high your photographer is above the scene and how far away he is from the subject.

Height matters

When you aim your camera, stop and ask yourself, "How did my little photographer get there?" If the answer is "by helicopter," you are probably not going to be happy with the result. Think about snapshots you have seen. The vast majority were taken with the photographer standing on the same level as the subject, the camera at his eye level.

While there are exceptions—freight yards taken from overpasses, towns shot from mountain sides—we generally photograph buildings, locomotives, and freight cars while standing on the same level. When you are trying to mimic reality in a photograph, you must mimic photographs taken of reality. For this reason, you must get your camera down from the heights.

This is much harder than it sounds. I model in N-scale, and with the smallest camera I own firmly placed on a model street, my little photographer's eye level is about fifteen scale feet above the ground. He will always be peering out a second story window. There are a few ways to get his feet on the ground.

Figure 4. This N-scale locomotive looks more realistic when it is photographed from below rather than from a "helicopter."

I could dig out the street to lower the camera, but this is frowned upon, especially if you are not photographing your own layout. I could move off the layout and shoot from right next to the facia. The problem with that approach is that there often is no foreground; instead, the bottom of the photograph is the facia. Cropping the photograph so that the facia doesn't appear looks very unnatural. We rarely photograph a full-scale building with the foundation at the bottom of the frame.

Finally, I could adopt that last choice but make sure that what I am photographing is above and some distance back of the facia. This choice is very common. Haven't you noticed how many model photographs are taken of trains on bridges, on embankments, or on the sides of mountains? These shooting locations allow you to lower your camera lens center to a scale eye level in a plausible location and still offer a foreground in the picture.

How far away?

This is not a trivial question. If your camera had one focal length, then the question of distance becomes easy: fill your viewfinder. However, your camera's zoom lens lets you to select from a variety of subject distances and still fill the frame with the subject. The effect of how much you zoom in or out can directly affect the impact of your photograph, and it is worthwhile to spend a little time discussing the subject. To do so, I need to talk about two topics and then tie them together.

Focus on the angle of view

When you zoom in or out, you are changing the effective focal length of your lens, and changing the effective focal length of your lens changes the angle of view. The smaller the focal length the greater the angle of view.

What did I just say? Let me explain.

When I use the term "focal length" I am not directly referring to focussing your lens, although the two ideas are related. The focal length of a simple lens, such as a magnifying glass, is the distance from the sensor to the lens if it were focused on something an infinite distance away. Modern camera lenses are not a single piece of glass—even a simple non-zoom lens will have six or seven pieces of glass—which is why I keep saying effective focal length.

As for a definition of "angle of view," you can look at *Figure 5* or you can do this simple experiment. Stand up, hold your arms straight out at an angle of about ninety degrees between them and with your palms vertical. Now, look between your palms at the scene beyond. Everything you see between your palms will appear in your viewfinder when you have a wide angle of view.

Move your palms towards each other until they are about two feet apart. Look again at the scene between your palms. That is what you would see in your viewfinder with a narrow angle of view.

If you have a small focal length lens, commonly called a "short lens," then you have a wide angle of view. This kind of lens is logically called a "wide-angle" lens. If you have a large focal length lens, commonly called a "long lens," then you have a narrow angle of view. This kind of lens is logically named a "telephoto." I guess it is not all that logical, but that is the terminology we use. On most point–and–shoot cameras, the range of the zoom is from a moderate wide angle to a moderate telephoto.

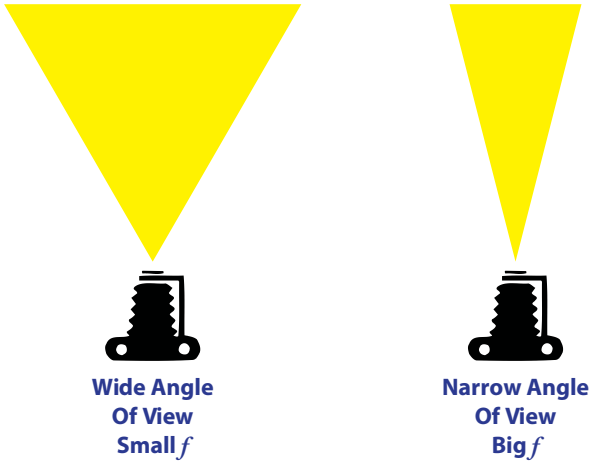


Figure 5. A small or "short" focal length lens has a wide angle of view. Everything in the triangle would appear in the viewfinder. A big or "long" focal length lens has a narrow angle of view.

Getting a perspective on things

That was the first topic; here is the second. We judge how far we are from things using, among other clues, perspective. I suspect that many of you may have looked at railroad tracks at some time in your life. Even though the tracks are four feet, eight and one-half inches apart, it appears as though they get closer together as we look further down the line. Since parallel lines never meet—they haven't been properly introduced—the convergence of the tracks is an illusion, and though we may not have handy tracks in a scene, our brains are busy creating those converging lines as we judge distances.

The rate of coming together, the convergence, differs depending upon how far away the objects are located. Take two basketballs and place one two feet away from you and the other four feet away. You can readily see that one ball appears much smaller than the other. Now, take the same balls and place them fifty and fifty-two feet away. They will appear nearly the same size even though they are still two feet apart. The rate at which things appear to shrink changes the further away they are, and this is used by our brains to determine distance.

Putting them together

Since our eyes have a fixed angle of view, we expect things to shrink in size at a particular rate. However, with a camera we can have different angles of view, and if we use a different angle of view than what our eyes normally see, we misjudge perspective. This is called perspective distortion.

Let me give you examples. Look at Figure 6. Our brain tells us that the objects are close to us because of their size, but they do not shrink in size as we would expect. We do not perceive the objects

Figure 6. Taken with a telephoto lens, the pickup truck with the camper shell is a full block further away than the mailboxes on the right. The stop sign is halfway between the truck and mailboxes. The telephoto has compressed the apparent distance between these three objects.

Perspective versus distance

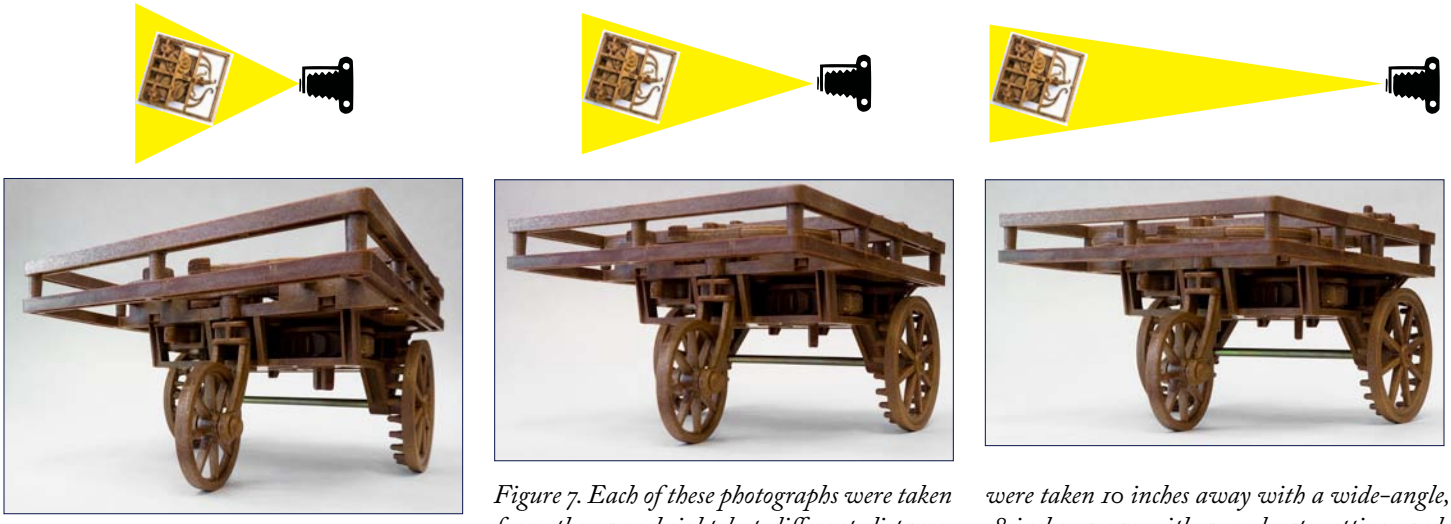


Figure 7. Each of these photographs were taken from the same height but different distances from the subject. In each case, the zoom was adjusted to fit the subject into the frame of the photograph. From left to right, the pictures were taken 10 inches away with a wide-angle, 18 inches away with a moderate setting, and 30 inches away with a telephoto setting. You can see the difference in perspective between the shots.

Figure 8. The venerable ski train at the Colorado Railroad Museum has probably been photographed a million times. In this shot I got close, used a moderate wide angle, and sat on the ground. You can see that the wide angle lens emphasized the nose of the F9.

as far away; we see them as closer together. A telephoto lens distorts perspective by compressing the depth. You will see the same effect if you look at a three-quarter shot of a long train taken with a telephoto. The rail cars look as though they are much shorter in length than they really are.

There has been a particular style of photography popular for the past few years. The photographs are of pets, generally dogs, taken from a view point above the animal looking down. The pet's nose is the size of a dinner plate, and their body is the size of a teaspoon. These are taken with an extreme wide angle lens and illustrate another kind of perspective distortion. It is the flip side of a telephoto; a wide angle lens appears to expand the depth of a scene. A mild example of this type of distortion is found in *Figure 8*.

Look at *Figure 7* for an example of how the appearance of perspective can be distorted by changing the camera to subject distance, then using your zoom lens to fill the frame of the picture.

Recommendations for view point

- Get your camera down; avoid, if possible, the helicopter shot
- Get as close as possible, then use your zoom to frame your subject[1]
- Look for interesting angles and shapes. Try to avoid the "straight on" shot[2]

[1] From the discussion about depth of field, you may be wondering why I am telling you to get close. Here is the secret: a wide angle lens has greater depth of field than a telephoto. However, if you keep the subject the same size in the frame, the depth of field for both focal lengths ends up the same.

[2] This touches on the subject of composition, and I am not crazy enough to offer advice about that. Look at photos you like, figure out why you like them, and then apply what you have learned.

Lighting the way

While light may reveal a subject, it is the lack of light that allows us to discover its shape. Shadows, not light, give dimension to our photographs. The ability of shadows to define shape is so important that photographers describe the quality of light based upon the cast shadows.

If the line between a shadowed and non-shadowed area is sharp, the light is called "hard light." The sun on a clear day is an example of hard light. Conversely, if the shadow transitions are gentle, such as you find on an overcast day, the light is called "soft light." The light in *Figure 9* is most certainly a hard light.

What makes a light hard or soft? It depends upon the size of the light source compared to the size of the subject. If the light source is small compared to the subject, then the light is hard. If the source is large compared to the size of the subject, the light is soft.

Figure 9. In this photograph of the Clovis, New Mexico Harvey House, parts of which are now used by the BNSF for offices and storage, the various levels of light—the shadows— give shape to an otherwise monochromatic building.

Let me give you an example. Consider a clear light bulb. The source is the filament inside the bulb, and the light will be hard. Now, frost the inside of that bulb. The size of the light source is now the size of the bulb. If you put a white coating inside the bulb, the light becomes even softer, and the bulb is known as a "soft white" light bulb. If you now put that bulb inside a reflector, the size of the light source is the entire reflector. It becomes even softer. Another name for soft light is broad light because the source is so broad compared to the subject.

If you move the light source closer to the subject, it becomes softer because the size of the source becomes larger in relationship to the subject. Move it away, and it becomes harder.

The reason you are concerned about this is that shadows can both expose detail and hide it. A hard light, such as the sun, against a roof can emphasize each row of shingles by the small shadow each projects. The grain of a weathered board can be highlighted by the shadows thrown by a hard light at an angle. On the other hand, there is not much detail visible in large areas of shadow; those details become hidden. A culvert becomes a black hole in a scene of an embankment.

Soft light, on the other hand, softens details. This is why portrait photographers spend large amounts of money on various equipment to create the softest light possible. No one likes to see their crow's feet in sharp relief.

When you take photographs of your layout, experiment with placing your light at different distances from your scene to see which kind of light is best for your shot.

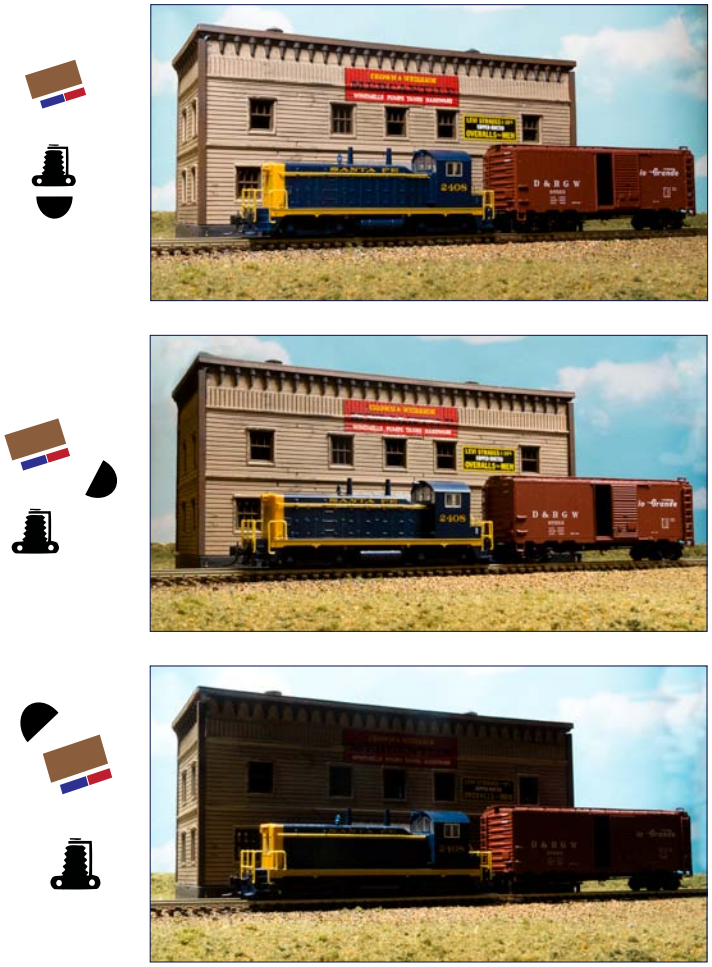


Figure 10. The only difference in these three photographs is where the light was placed. The black semicircle represents the reflector with a single bulb. In the top picture the reflector was held directly above the camera, while in the other two photographs the reflector was pointed as shown and at the same height above the model as in the first picture.

Direction matters, too

While the size and distance from your light sources affects how sharp the shadows appear, the direction of the light determines where the shadows fall.

An N-scale model building and train are the subjects in Figure 10. The only difference between the photographs is the location of the single light source, a CFL bulb in a ten inch reflector.

Notice that the photograph has more dimensionality in the second photograph when the light is held off to one side compared to when it is pointed straight on. The third photograph, although much of the detail of the front of the building is missing, can evoke a mood that may be appropriate to the subject. It appears to be either early morning or late afternoon, a view which may make the photograph more interesting.

The light you should never use

I will get into specific recommendations for light sources in a moment, but there is one light source you should **never** use: the flash on your camera. There are so many things that are wrong with the light from your built in flash that it would take another page just to list them, but here are a few.

Your built in flash gives the flattest light possible; details are lost. Shadows radiate away from your flash, and as you are very close, they fall in different directions across the scene. This would never happen in a photograph of a sunlit scene. Your lens may end up blocking the flash, giving you a semicircular shadow at the bottom of your picture. Instead of an occasional sparkle of reflection, you can end up with an entire wall full of reflected glare. I can not say this strongly enough: never, never, never use your built in flash for layout photograph. See *Figure 11* for what can go wrong.

Figure 11. Evidence of the dreaded on-camera flash is obvious in this photograph. The strange shadows under the car and the glare at the corner of the roof and front size are very obvious. What is even more obvious is the strange curved shadow. That is the shadow caused by the lens on the camera.

White light has color

Before I get into specific recommendations, I need to explain white balance.

When you look at a piece of white paper under an incandescent light, such as a normal 60 watt light bulb, it looks white. Take that same piece of paper outside on a sunny day, and it still looks white. This is another miracle of human vision; our eyes adapt amazingly well to different kinds of light sources.

Unfortunately, film cannot. If you shot a photograph outside using daylight film of that sheet of paper, in the print it would look white. If you used the same film and the same paper to take a photograph of it under the light bulb, it would look as yellow as a lemon. The reason is that incandescent light has a lot less blue in its spectrum light than sunlight. You can see this by looking at a car's headlights outside on a sunny day. They will look yellow.

Even scenes shot outside can be affected. Pictures lit by the sky instead of direct sunlight or shot on overcast days can look very blue.

While film cannot adapt, your digital camera can, and the setting that does that is called white balance. Normally, you can rely on something called auto white balance. This is the default setting on your camera, and the camera guesses, usually correctly, at the kind of light that is falling on a scene.

Where you can get into trouble is if you have two different kinds of light in that scene, say both incandescent and fluorescent lights. In that case your camera will adjust for one but not the other. If it adjusts for the fluorescent, then anything lit only by the incandescent lights will look too yellow. If it adjusts for the incandescent light, then anything lit only by the fluorescent lights will look greenish blue.

The moral is this: don't mix types of light sources when you are photographing.

Sources of light

There are three different types of light sources used in indoor photography.

The first is flash. It has the advantages of being the same color as daylight and of being very powerful. Unfortunately, most point-and-shoot cameras are not set up to control off–camera electronic flashes. Also, it is very hard to see what your lighting will look like until you take a photograph and look at the back of your camera.

The second is continuous light. The biggest advantage to continuous lighting is that you can see immediately where the shadows fall. There are three kinds of continuous light that you could use.

Light emitting diodes (LED) lights are wonderful. They are bright, cool, and match daylight well. They are also very expensive.

Photo flood lights should be familiar to anyone who has had to face them while looking at a Super 8 movie camera. They are bright, inexpensive, and easily within the white balance capabilities of digital cameras. They are also short-lived—six hours is a common life—and extremely hot. At best, they may make you sweat because of the heat. At worst, they are a fire waiting to happen.

The best choice of all is compact fluorescent lights (CFL) designed for photography. They are not as bright as other kinds of lights, but they are bright enough. They are designed to match daylight, so white balance is not a problem. And best of all, they are very cool, so you won't be cooked while you photograph.

You do need to get CFLs designed for photography; the bulbs you purchase at your grocery store are designed to mimic the light output of incandescent lights. Also, those lights often do not have a complete spectrum of light. This is fine for your eyes, but horrible for your camera.

The third type of light is not a light at all; it is a flat reflector. Your camera does not have the same ability to see into the shadows as your eyes, but you can use a piece of white foam core cut to a reasonable size to reflect the main light into the shadows.

Recommendations for lighting

- Purchase two CFL lights designed for photography. These are available at camera stores or online and will cost you about $15-$20 each.
- Use clamp lights available from your local hardware store to position the lights.
- If you want to really be uptown, you can purchase a lighting kit from your local camera store or online. An example kit is the Smith Victor Thrifty Lighting Kit which has two reflectors, two light stands, and two umbrellas—which will be useful if you want to take portraits, but you probably will not need them for layout photography. The cost will be about $110, and the light stands really are handy.
- Use only one light on your main subject. This is called your main light.
- Use the second light, if necessary, to light the background. We have only one sun, so make sure that the second light does not overlap the main light as you do not want multiple shadows.
- Use white foam core or cardboard to reflect the light from your main light into shadows if necessary.
- Turn off your layout room lights. The only light you want is the light you can control completely: the light from your reflectors.
- Remember that the further the main light is from our subject, the harder the light will be. Unfortunately, it will also be much dimmer, so compromise is the key.

Finally, a practical example or two

After giving all this advice, it is important to demonstrate that it was good advice. I need to put my money where my mouth is. The next page is an application of nearly everything that I've written.

I did cheat. I no longer have a layout—I am in the midst of a rebuilding effort—so I asked Patrick Lana if I could use his CRANDIC N-scale layout as the subject. Why is this cheating? Because he has a wonderfully detailed layout and almost any photograph I took was going to look good.

I used a Nikon J–1 camera. This camera does have interchangeable lenses, but it still has the small sensor and maddening menu system shared with other point-and-shoots. Other than setting the aperture, I let the camera make all decisions about exposure, white balance, and focusing.

I used a substantial Bogen tripod, but that is because it is the only tripod I own. Although not listed in my recommendations,

This scene required two lights: one to light the subject and one to light the hill in the distance and the sky. The main light is the one closest to the camera. Its angle produced the nice shadow under the overpass. The sky is bulletin board paper on a piece of foam core.

Because there was no background to worry about, this scene required only one light. The angle of the camera was a bit high, but that was necessary to see into the pens.

Pat's layout is an island shape, and the walls of his layout room are painted with a wonderful sky. The two photographs above were lit with a single light on the models and a second light next to the wall to light the "sky."

a substantial tripod is always a good thing. Try to avoid the $29 WalMart specials.

I used two economy model Smith Victor reflectors on Smith Victor stands. The lights were daylight balanced CFLs I purchased at Mike's Camera.

Instead of using Photoshop or Lightroom, I used Picassa, a free and simple editing program available from Google. Other than cropping the photographs, I only tweaked the exposure and sharpened them.

—SH

March Takes You On A Trip

The March meeting will open with a video provided by Dick Hunter: the first non-employee run of Denver's Light Rail including a visit to the shops and control center. This was a special tour of the Sunrise Division on April 16, 1994 Of course it will be followed by a great Tool Time Tip segment.

Dick is also providing the clinic, "Railfanning the Cumbres and Toltec Scenic Railroad." It is an on–screen presentation of what you can see both when riding and chasing the train at the Big Horn Mixed Convention in June

Show and Tell is turntables which really should be the last thing on the agenda so it could round out the evening. **–SH**

WANTED: PROMOTION CHAIR

§Job Description: Make promotional items for Sunrise Division activities, such as flyers for mini-meets, and division meetings. Make new friends at the copy store and Office Depot.
§Benefits: Amaze your friends by displaying your wonderful talents. Let your creativity inspire us, the more graphically challenged.
§Hours: Unlimited, as many as you want.
§Pay: Know that through your advertising you could save lives, giving meaning to someone's life who may have otherwise wasted away, never becoming a model railroader.

☞ Apply to your friendly neighborhood Sunrise Division Superintendent.

Show & Tell Themes

When you submit a model for the show and tell, you automatically are entered into a drawing for a gift certificate from Caboose Hobbies in Denver.

March 1.....Turntables
April 5.....Waterfront Structures
May 3..... Logging Equipment

Upcoming Events

- *March 1,* **Sunrise Division Regular Meeting,** Holy Love Lutheran Church, 4210 South Chambers Road, Aurora, Colorado. 7:15 PM
- *March 3,* **SCFD Free Days-Galloping Goose Ride,** Colorado Railroad Museum, Golden, Colorado. Free admission. Goose rides available for purchase only.
- *March 3,* **Free Clinics,** Caboose Hobbies, 500 South Broadway, Denver, Colorado. 10:30 AM: Airbrushing. 1:30 PM: Open Car Loads.
- *March 3—4,* **Rocky Mountain Toy Train Show,** Denver Merchandise Mart, 451 East 58th Avenue, Denver, Colorado. 10 AM—5 PM
- *March 10,* **Free Clinics,** Caboose Hobbies, 500 South Broadway, Denver, Colorado. 10:30 AM: Lightweight Scenery With Geodesic Foam. 1:30 PM: DCC Applications.
- *March 10,* **Galloping Goose Rides,** Colorado Railroad Museum, Golden, Colorado. 9 AM—5 PM
- *March 17,* **Model RR & Toy Train Swap Meet,** The Foothills Society of Model Railroaders. Green Mountain Presbyterian Church, 12900 West Alameda Parkway, Lakewood, Colorado. 9–11:30 AM
- *March 17,* **Free Clinics,** Caboose Hobbies, 500 South Broadway, Denver, Colorado. 10:30 AM: G-F Scale Modeling. 1:30 PM: WEATHERING TECHNIQUES.
- *March 24,* **Free Clinics,** Caboose Hobbies, 500 South Broadway, Denver, Colorado. 10:30 AM: CTC Signalling vs Track Warrants. 1:30 PM: Installing DCC Decoders.
- *March 31,* **Free Clinics,** Caboose Hobbies, 500 South Broadway, Denver, Colorado. 10:30 AM: Detailing Structures. 1:30 PM: DCC So You Think You're a Rail Fan.
- *April 5,* **Sunrise Division Regular Meeting,** Holy Love Lutheran Church, 4210 South Chambers Road, Aurora, Colorado. 7:15 PM
- *June 8-10,* Big Horn Mixed, 2012 Rocky Mountain NMRA Regional Convention, Chama, New Mexico. Mixed steam freight railfan photographers' special on the Cumbres & Toltec Scenic Railroad. www.bighornmixed.com
- *July 24–August 4,* **Grand Rails—2012,** NMRA National Convention. Grand Rapids, Michigan. www.gr2012.org