

YouTube Model Builders eMag

A Free YouTube Model Builders e-Magazine
Produced by YouTube Model Builders.

BE PART OF THE
COMMUNITY

YTMB LIVE! SHOWS
YTMB HANGOUT SHOWS

VOLUME 3

www.YouTubeModelBuilders.com

NOVEMBER 2017

ARTICLES YOUTUBE CHANNELS COMMUNITY TIPS & TRICKS

N Is For November Is For N-Scale

INSIDE THIS ISSUE:

- A Special Holiday Gift
- An Unexpected, Unintended, Unapologetic Obsession
- Watch out for the Cave-N!
- A Chalky Situation

Be Sure To Check Out Columns From
Jack Hykaway, Harry M. Haythorn,
The Track Planner, and Blayne Mayfield

Cover Photo:
Courtesy of Ron Marsh

BE SURE TO CHECK OUT

YouTube Model Builders LIVE!
Join Us LIVE Every Month



Editor's *Note...*

I cannot believe that three years have gone by since the very first issue of the YouTube Model Builders eMag! They have been most enjoyable ones because we truly enjoy putting this magazine together for you. The holidays are upon us once again, and it is a great time for us to get some rest and to explore our model railroading curiosities. It is also a great time to catch up on the past issues of the eMag.

In this issue, we explore N scale. Many modelers are curious about this scale and are reluctant to model in it because they continuously hear from others in the hobby that it requires much patience, a higher degree of skill, nimble fingers, and 20/20 vision. While some of these fear factors may be true to some extent, they should not forge a blockade in front of your willingness to at least explore it. In fact, many of the problems that plagued N scale models in that past such as lack of quality, lack of detail, lack of parts, or lack of capability are no longer an issue. I believe that is what you will surmise after reading the articles in this issue.

Before we get into discussing N scale, we begin this issue with a special visual essay from Kay Wong, an artist in Hong Kong who loves trains and railroads (both old and new). This pictorial essay showcases a handful of Kay's beautiful drawings and watercolors. He certainly has talent. We call this essay "Eye Candy" and it is our special thank you gift to you.

Ron Marsh and Bob (Da'Bob) Olson discuss their N scale layouts and give their perspective on N scale, including advantages and disadvantages they have experienced while constructing their layouts.

The Track Planner explores the advantages, the disadvantages, and the challenges of designing an N scale track plan and provides many useful tips when designing a layout for this scale.

In the "Food for Thought..." column Blayne Mayfield explores why N scale is gaining in popularity and Harry Haythorn tells us about the history of and how his club came to acquire the famous N scale Hump Yard layout developed by Union Pacific to train engineers how to manage operations at a real hump yard. Lucky guy!

We switch gears with "Jack's Junction." In his column, Jack Hykaway takes you on a journey aboard the Glacier Express in Switzerland and discusses how it traverses the steep mountainous terrain of the Alps by leveraging a unique rack-and-pinion gear and rack rail system.

Ralph Renzetti discusses the use of chinks, pastels, and powdered paint pigments and ranks them based on his experience and preferences in his article entitled "A Chalky Situation."

We wish you a safe and wonderful Holiday season and a very Happy New Year!

– **Loggin' Locos**
Editor-In-Chief



Table of Contents...

The Mainline

06 *Eye Candy—A Special Holiday Gift*
A Visual Essay
By Kay Wong

17 **An Unexpected, Unintended,
Unapologetic Obsession**
By Ron Marsh

23 **Watch out for the Cave-N!**
By Bob “Da’Bob” Olson

36 **A Chalky Situation**
By Ralph Renzetti

About the Cover

The high steel trestle bridge over Beggar’s Canyon on Ron Marsh’s N scale layout makes for a dramatic shot taken along Beggar’s Creek far below.

Photograph Courtesy of [Ron Marsh](#).

YouTube Model Builders eMag Team:

Editor-in-Chief	JD - Loggin' Locos
Content Editor	Blayne Mayfield
Content Editor	Jack Hykaway
Content Editor	Jen Hanson
eMag Articles Ambassador	Harry M. Haythorn - UPHS #4043
eMag Photographer	Jack Hykaway

The Staging Yard

30 **COMMUNITY COLLAGE**
The collage showcases model railroading pictures from the community.

31 **Pick 3⁵**
Pick 3 showcases three YouTube channels that stand out for their contribution to the YouTube model railroading community.

The Branch Lines

27 **A Perspective On Track Planning**
Track Planning in N Scale
By William (Bill) J. Beranek —The Track Planner

32 **Harry’s UP-HUB**
The N Scale HUMP Yard — An Historical Layout
By Harry M. Haythorn, UPHS #4043

42 **Jack’s Junction**
CLIMBING HIGH 
On Board the GLACIER EXPRESS
Jack Hykaway

48 *Food For Thought...*
Why is this N thing becoming the “in thing”?
By Blayne Mayfield

50 **Change**
By JD (Loggin’ Locos)

Contributing Authors:

Jack Hykaway
William (Bill) J. Beranek
Harry M. Haythorn - UPHS #4043



YouTube Model Builders **HANGOUTS**

We have several different types of shows each month!

For the latest schedule updates please go to
www.YouTubeModelBuilders.com.



Tuesday night shows are topic-driven and are hosted by Johnny of Southeast Rails. The shows include various topics and interesting guests such as Miles Hale and Ralph Renzetti.



During this Thursday night show, open discussions are topic driven and fellow YouTube modelers join in to discuss various model rail-roading topics.

Gain A New Perspective On Your Track Planning With The Track Planner!

Follow Bill Beranek's column "A Perspective on Track Planning" in every issue of YouTube Model Builders eMag.

Topics include:

- ✓ Principles of Track Planning
- ✓ Designing for Operations
- ✓ Proper Benchwork Design
- ✓ Planning for Different Scales

And much, much more!



Eye Candy

A Special Holiday Gift

With many thanks to all of our readers!

A Visual Essay



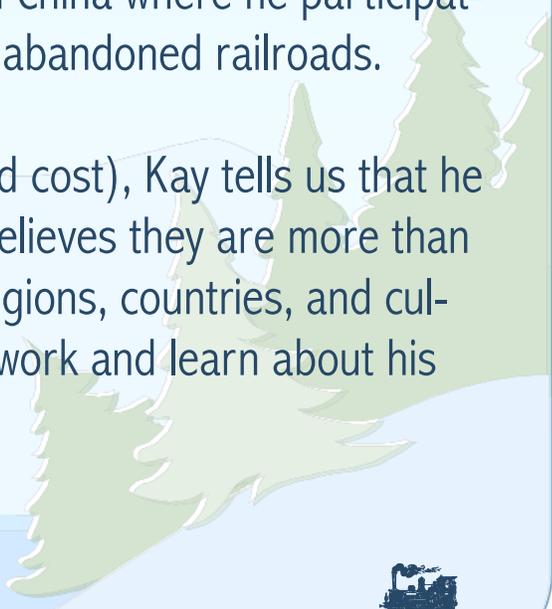
By Kay Wong

Kay Wong is a full-time artist who lives in Hong Kong where he works as a contracts-based artist and as a secondary school visual arts teacher, teaching drawing to children.

Besides being an artist, Kay is also a cyclist, a fiction writer, and an explorer. He loves to go exploring for old trains and has been to Poland, United States (Texas), and recently to Mainland China where he participated in a working team to uncover and study old abandoned railroads.

Although he is not a modeler (due to space and cost), Kay tells us that he loves trains (old and new) and railroads. He believes they are more than just vehicles. To him, railroads help connect regions, countries, and cultures. You can see more of Kay's fantastic artwork and learn about his travels on his website www.eggstudio.com.

We hope you enjoy this “eye candy!”



A tram shuttles passengers under a dark sky in Krakow, a large historical city in the south of Poland.



Watercolor
14.8cm x 21cm
5-17-2017

Kay, 7-5-2017

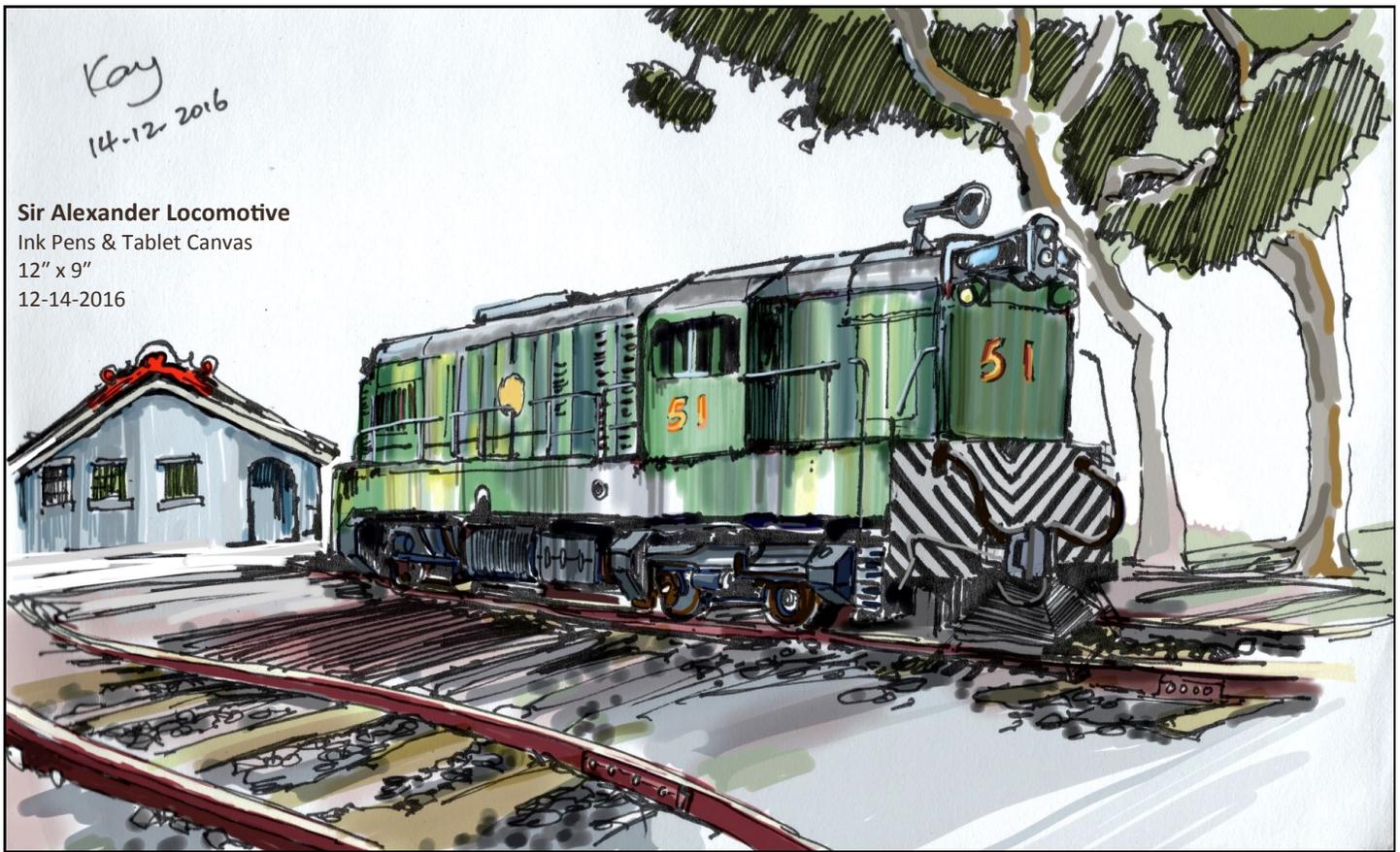


A modern tram model operates in Kiev, the capital and the largest city in Ukraine.

An older model of a tram dating back to when Ukraine was a constituent republic of the former Union of Soviet Socialist Republics (U.S.S.R.) still operates on the road.



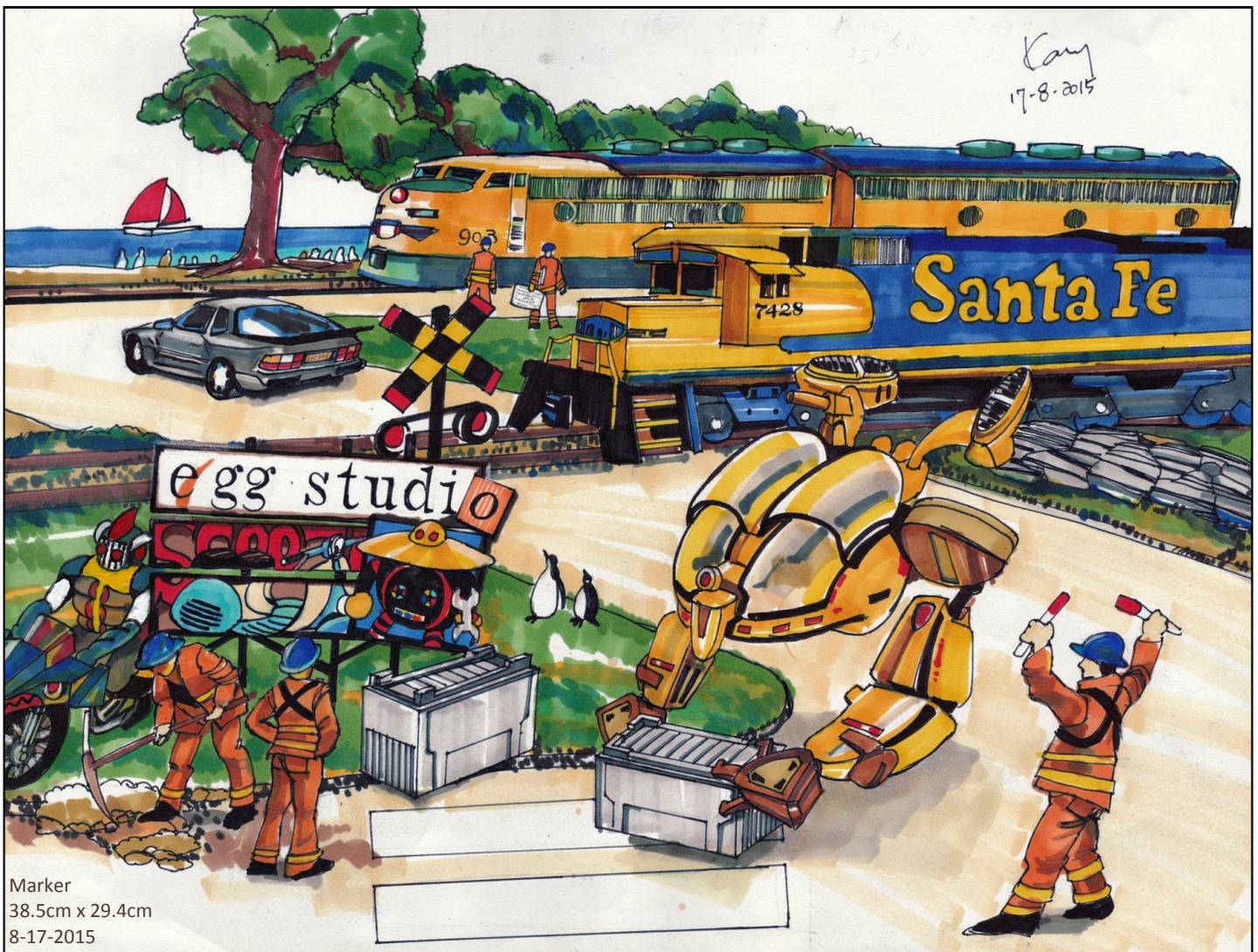
Water Soluble Color Pencils
14.8cm x 21cm
4-29-2017



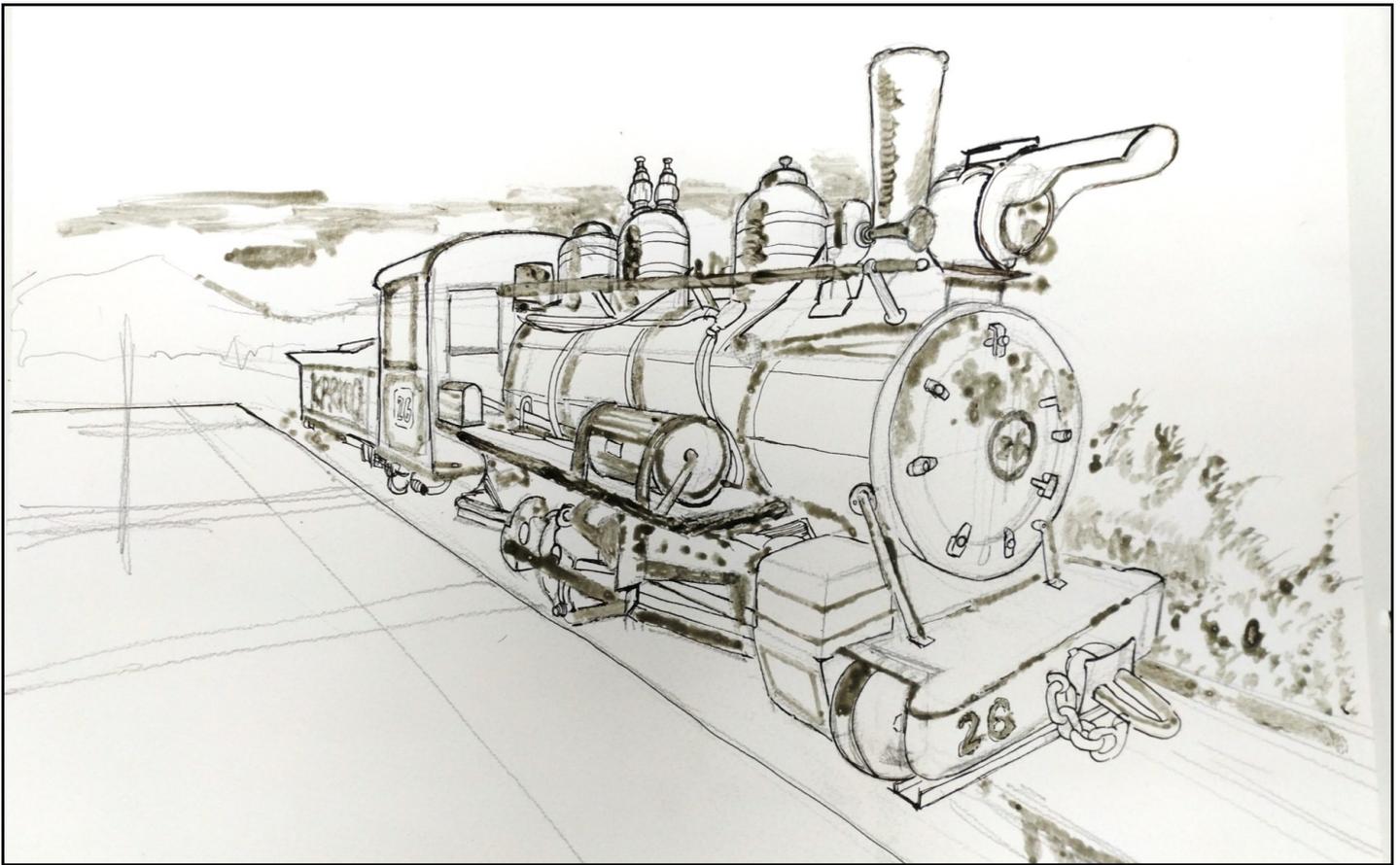
A beautiful pen and ink drawing of the Australian-made diesel-electric engine (an EMD G12) number 51 christened "Sir Alexander" after the then governor of Hong Kong Sir Grantham. Engine number 52, a companion engine, was christened "Lady Maurine" after the governor's wife. Sir Alexander served Hong Kong Railway from 1954 to 1997. It has been restored and is exhibited in the Hong Kong Railway Museum.

You can find more information about Sir Alexander by clicking [here](#). Please click [here](#), or the image above, to watch Kay colorize this drawing.

Kay has used model trains, Japanese die-cast toys, and various figures to create an interesting scene of a railroad junction in this whimsical drawing.



Marker
38.5cm x 29.4cm
8-17-2015



An initial sketch of a Baldwin 0-10-0 SN26 which was manufactured in the US between 1928 and 1929.

The SN26 operated on the 600mm narrow-gauge Jijie & Gejiu Railroad (雞箇鐵路) section of the Yunnan-Kopei Railway line in Kunming, a mountainous region in southwest China, pulling both cargo and passenger cars until 1991.

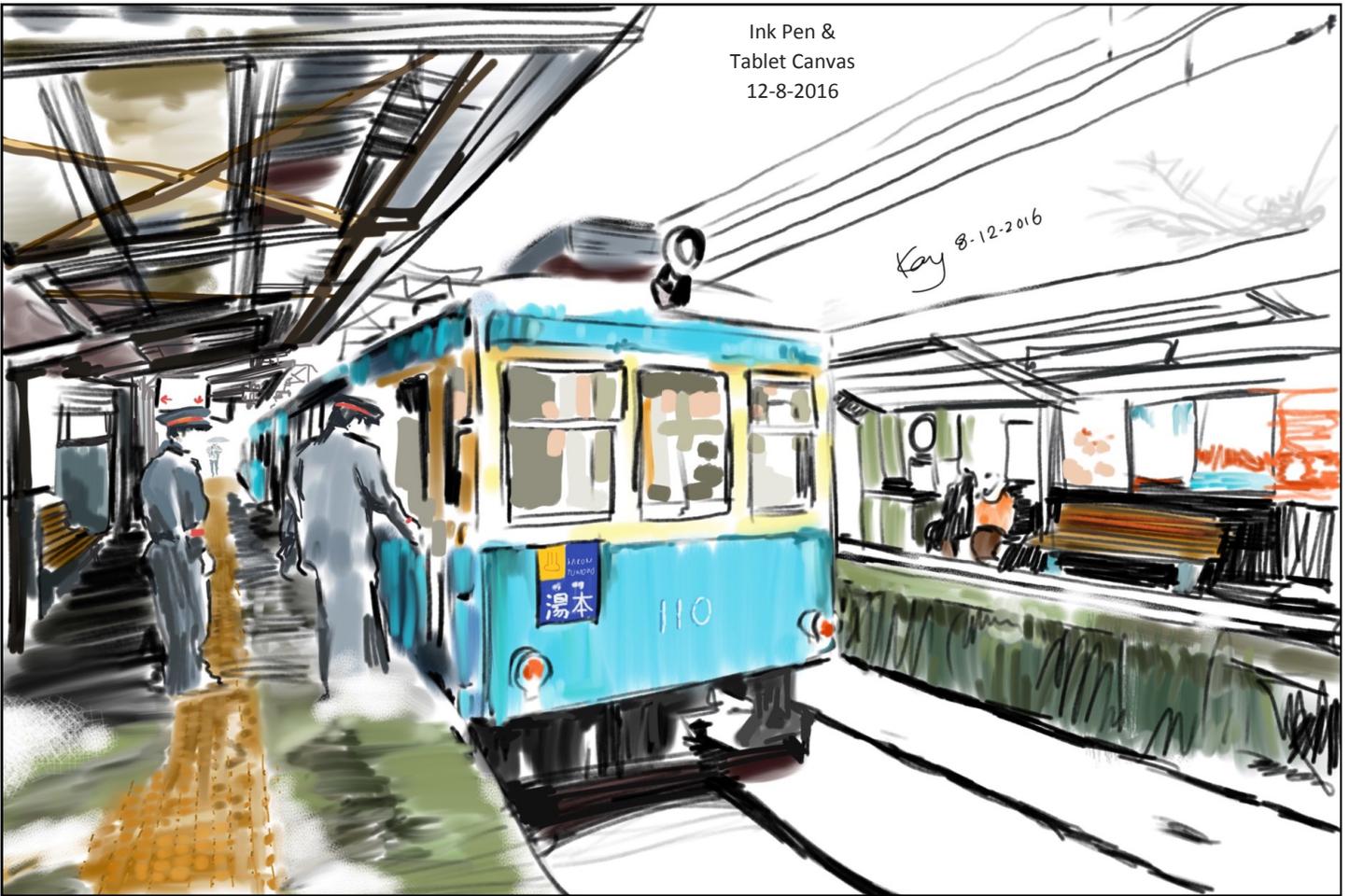
The Jijie & Gejiu Railroad continued operations until it was shut down in 2009. It was the last 600mm narrow-gauge railroad in Mainland China. The SN26 is one of three remaining Baldwin 0-10-0s and was restored by Nanxiang depot. It is now exhibited at the Shanghai Railway Museum.

The finished drawing in full color.
Just beautiful.

Click [here](#) for a photograph of this engine and its specifications.
You can use Google translate to convert the content to English.



Ink Pen &
Tablet Canvas
12-8-2016



One of two models of trains being operated on the Hakone Tozan Railway line in Japan. See next page for a drawing of the other model.

These were produced around 1955 -1956 and are still serving the locals and tourists.

Below is another drawing by Kay Wong of a train in service on the Hakone Tozan Railway line in Japan.

You can get more details about these trains (in Japanese) [here](#).
You can use Google translate to convert the content to English.





Three engines patiently wait their turns at a train depot in Shaoguan, Guangdong, China.

The two orange-colored engines are DF4 diesel-electric (東風 4 型) engines. The blue and white engine is an Shaoshan 8 (SS8) (韶山 8 型) electric locomotive.

An Unexpected, Unintended, Unapologetic Obsession



By Ron Marsh



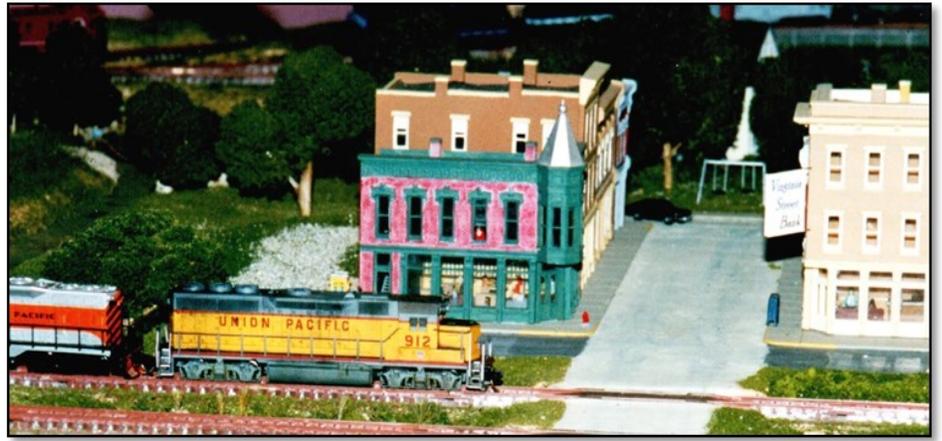
An SD70MAC #9830 exits the east portal of tunnel #2 into Bugler's Basin. Tunnel #2 marks the west end of the layout.

All photographs by Ron Marsh

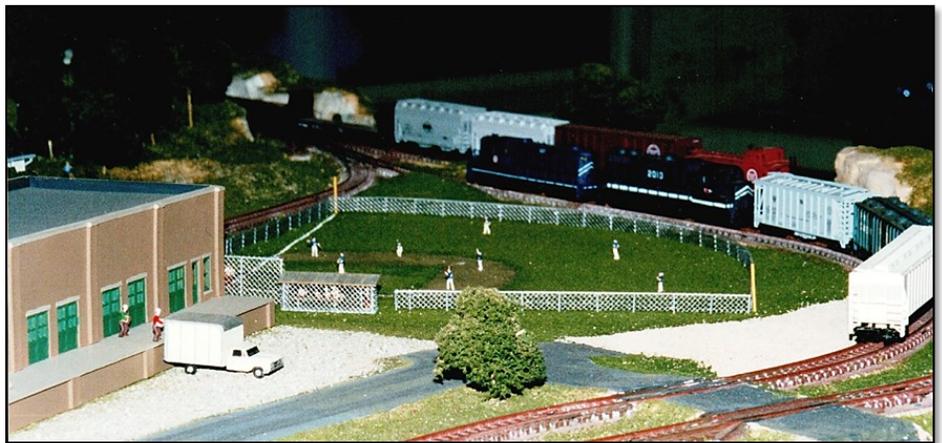
We often make decisions that are unplanned but necessary in light of our circumstances. A job may transfer us to a place we never intended to live, for example, or following our child's interests may lead us to become a fan of a sport we never thought we would follow. My involvement in N scale model railroading is an example of an unexpected and unintended interest that resulted from life's circumstances.

I have been a rail fan for as long as I can remember. I grew up on a farm in West-Central Missouri that lay halfway between two railroad towns. To the north lay the Gulf Mobile & Ohio Railroad (GM&O). There my dad bought and unloaded sacked livestock feed directly off the box-cars on a team track at the small local yard. To the south lay the Missouri Pacific Railroad (MoPac) in my hometown. There I would visit my grandmother and run out in the yard to count cars and watch the caboose every time I heard a locomotive's horn blow.

I carried this fascination with trains into young adulthood. It was not until I was 28 that I discovered the hobby of scale model railroading. My wife and I were vacationing in Florida and stumbled upon a model railroad shop with two operating layouts in the windows. One, in particular, caught my eye. It was a layout depicting a town with a trolley that ran in the street. The trolley would run to one end of the line, stop automatically, wait several seconds, then reverse and run to the other end of the line where it would repeat the process. I was mesmerized.



Main Street on Ron's first layout shows some of his first N scale projects. The scene includes a busy café and bank with detailed interiors and a scratch built playground at the end of the street.



This baseball field on Ron's first layout was completely scratch-built. He also hand-painted uniforms on all of the team members. The teams are composed of figures originally intended to be track workers and standing pedestrians.

I stepped into that store and into the grand new world of model railroading. I was thrilled with the displays of various locomotives and rolling stock, structures, kits, and many other model railroading accessories. It was there that I discovered and purchased my first magazine from the hobby. I had always dabbled in a series of hobbies—woodworking, electronics, various collections, and golf. That day I told my wife, "I am trading all of my other hobbies for this one," and thus a life-long passion was born.

I immediately began reading hobby magazines and collecting HO scale equipment from my favorite road, the Missouri Pacific. I faced, however, a two-fold frustration. First, I was young and just starting a family, which meant that my finances were limited. Second, my career at the time led me to move periodically. Lack of funds and lack of a long-term home made it hard for me to build an HO scale layout.

After a few years of this frustration, I decided I had to do something to



This view from the south end of North Yard in Saginaw, TX shows the yard's layout and general functionality. North Yard is the focal point of Ron's current layout, the Texas, Colorado and Western Railway. Adjacent to the yard, are several rail-served industries including Attebury Grain (foreground left).

satisfy the modeling bug within me. It was then that I decided to buy a little bit of N scale equipment and build a small, portable, 4'x4' layout that I could move with me and practice my skills, such as scenery building, structure building, and track laying. I built a series of structure kits from Walthers and Design Preservation Models to represent a small town main street and a few industries. It was also on that first small layout that I did my first scratch

building. I designed and built a small feed store warehouse similar to the ones I remembered from my childhood. I was most proud of the stick-framed windows and doors made from individual boards of scale lumber. I was pleased with my ability to use even my limited skills to create scenery from Styrofoam, plaster, ground foam, and twigs that was realistic and convincing. I was most impressed, however, with how much N scale railroad, town, and scenery I

could fit into 16 square feet. That is when it began—an unexpected love for the smaller scale. That was over 20 years ago and I am still obsessed with N scale.

On that first 4'x4' layout, I discovered two things about N scale that hooked me. The first thing was that I could fit so much more into the same space in N scale. On that little 4'x4' layout, I could fit over half a scale mile of track with a passing siding and three industry tracks and still have room for structures and scenery. For me, this has always meant that I could effectively double what I could model in a given space over HO scale.

The second thing I quickly learned about N scale was the ability to trick the eye into perceiving detail that was suggested but not actually there. Modelers strive to do this to some extent no matter what scale they use, but I found that I could suggest detail much more easily in N scale and the eye and mind would fill in the blanks. For example, several buildings on my first layout had detailed interiors. Since there was very little N scale furniture available, I had to improvise. I discovered that, in many cases, I could use a simple scrap of styrene as a chair back glued to the back of a figure and convincingly suggest a chair that no one knew did not exist. I also learned that within this small scale I could drybrush texture on things such as tree bark that looked convincing even though the surface was actually smooth. These techniques are much harder to duplicate in larger scales.

Today I am building my third N scale layout, the Texas, Colorado & West-



North Yard's tower, mechanical shed, fuel facility, and Attebury Grain are all scratch-built structures. In the background, a former old rusty Missouri Pacific switcher shunts covered hoppers for Attebury Grain.

ern Railway (TCWR). I have transitioned from modeling the Missouri Pacific Railroad in Missouri in 1978 to modeling BNSF in North Texas in 2008. I left behind the 4'x4' layout for a double-deck, point-to-point layout with 100 feet of visible mainline, a helix, and an 8-track staging yard at each end in an adjoining room.

The Texas, Colorado & Western's focal point is the North Yard in Saginaw, Texas, a suburb on the north side of Fort Worth. From North Yard, the railroad switches a number of local industries in Saginaw and also interchanges traffic with UP in the Fort Worth Downtown Yard and the Fort Worth & Western Railroad at Hodge Junction. Traveling northwest from Saginaw (onto the helix) the railroad rolls through the small town of Bowie and on to Wichita Falls, Texas. There, the rail-

road again switches several industries and interchanges with the Wichita, Tillman & Jackson Railway. Continuing west out of Wichita Falls the railroad travels a fictitious route through Central Colorado. (Mountain scenery was a request from my wife since the layout shares space with our family room.) The layout is built for operations and is best suited for a 4-5 person crew including a dispatcher, a yardmaster for North Yard, and 2-3 "operators" (engineers/conductors).

The Texas, Colorado & Western Railway is still very much under construction. All tracks except a couple of industry sidings have been laid, and most of the scenic forms are in place. The scenery is only about 20% complete; I also need to build about 50% of the structures, and I am still filling out my freight car roster. Progress is slowed by the fact

that most of the structures either must be kit-bashed or built from scratch. With so much left to do, the Texas, Colorado & Western Railway has nonetheless provided a great deal of enjoyment and satisfaction already.

When talking about N scale railroading with those who model in larger scales, I often hear the concerns that their hands are not steady enough or eyes not strong enough for such a small scale. As I have aged with this scale, however, I have found that there are techniques that can be learned to help steady the hand and equipment to aid the eyes. Other issues that I once considered disadvantages to N scale have improved with the advancement of time and technology. DCC technology has become miniaturized to the point that even N scale switchers can be purchased already equipped with or



Wichita Falls Yard is a local switching yard that handles a number of local industries as well as the interchange with the Wichita Tillman and Jackson Railroad via the nearby Katy yard. In the background is the historic Holt Hotel, the first of several kit-bashed structures that will make up the Wichita Falls skyline.

The small town of Bowie, Texas still relies on the railroad to serve several small businesses. Here the local switches to serve Midwestern Mud Services and Berend Bros Farm and Garden.





BNSF Dash 80-40CW #803 leads an eastbound past Summit on the freelanced mountain section of the Texas, Colorado and Western Railway.

easily upgraded to DCC. Sound decoder and speaker technologies have improved to the point that I find myself amazed at the quality of sound that can be produced from the inside of a 1:160 locomotive. Detail quality has made huge strides as well in the past 20 years. Details like handrails and couplers are much closer to scale size than before. Many models now feature wire grab irons and stirrup steps as well as delicate brake details. The old pizza cutter wheelsets have been replaced with semi-scale wheelsets. These and many more advances in detailing have been aided by the competition of newer companies that have significantly raised the bar on delicate N scale detail.

If there is a needed area of improvement for N scale, in my opinion, it is the availability of a greater variety of structures. This is especially true of modern industrial structures. There

is a fair assortment of 1950s industrial structures available, but modern warehouses, factories, and city buildings are few and far between. On the positive side, this lack of variety encourages N-scalers to grow their skills of kit-bashing and scratch building. Modern vehicles are also in short supply in 1:160. If I could make one request of model manufacturers it would be to increase production of these structures and vehicles.

Nearly every choice we make involves some compromise. N scale, as any scale in model railroading, certainly has its challenges. In my opinion, however, the advantage of space outweighs any disadvantages the scale brings with it. I never expected or intended to become an N scaler, but when the fortunate accident of walking into that Central Florida model railroad shop occurred, it yielded a life-long obses-

sion for which I am wholly unapologetic and most grateful. 🚂

About the Author

Ron Marsh is a pastor in Southwest Missouri. He grew up in West Central Missouri where he became a railfan of the Gulf, Mobile & Ohio and Missouri Pacific Railroads at an early age. Ron has been a model railroader for over 20 years and has modeled 1970s Missouri Pacific and contemporary BNSF. He is currently working on his third layout—the Texas, Colorado & Western—depicting BNSF operations in North Texas and Colorado in 2008. He is a member of the [N Scale Enthusiasts](#) – a national organization for N scalers. Ron posts model railroading videos weekly to his YouTube channel, [Ron's Trains N Things](#).

Watch out for the Cave-N!



By Bob “Da’Bob” Olson

All photographs by Bob Olson.

It all started in 1976 with a Bicentennial Tyco HO set (and I still have most of the pieces). This inspired me to build my first layout, an L-shape formed from two 4'x8' sheets of plywood. I added lights and switches and built tunnels and mountains to make it seem more realistic. A few years later I joined a club, which gave me an opportunity to work on some serious construction, including a 32' dog bone layout on wheels with two helixes on it. But then I packed away my trains, and for the next 25 years, I moved around a lot with no place for them.

Beginnings of the N Scale ManCave

When I turned 50, I said to myself, “I miss my trains; I think I will bust open those boxes of old HO, DC stuff to see if it works.” As you might guess, it didn’t work out so well: two of my DC power supplies were toast, and the engines needed lots of cleaning just to get them running. I also looked at my available

space (a 10' x12' bedroom) and realized that the railroad empire I wanted would never fit there. That’s when I realized N Scale was something I needed to explore.

I took a chance and looked on Craigslist for model trains to see what was there in N scale. I found someone selling 24 locomotives, 75 pieces of rolling stock, a number of structures (some built and others not), track, and DCC and DC controllers. I bought it all and brought it home. Most items were under 3 years old, so I think I got a great deal. Now that I had an N Scale “starter set,” I began planning a huge layout.

The layout of my dreams would extend beyond

Figure 1. The fifteen-layer helix transitions between the ceiling and lower levels.





Figure 2. Bob's N scale yard takes up much less space than it would in a larger scale.



Figure 3. The 18-bay roundhouse provides room for lots of motive power. The roundhouse and the 130' turntable sit at the base of the mountain which covers the fifteen layer helix.

the bounds of the ManCave (that 10'x12' bedroom), but I didn't want it to be in the way while walking around the house. This meant that the space near the ceiling was the only great option for me. I started out making a loop around the ceiling of the ManCave to see what it would look like and if it was worth expanding beyond that; I decided it was. So, I set out to design a layout that would go from room to room 8 inches below the ceiling. This way, it

would be out of the way, but still visible. Sure, a step stool is needed to see the layout better, but the sound of the train running is what I wanted to hear; soothing white noise.

Then, the opportunity presented itself to obtain an 11-layer helix, an 18-bay roundhouse, and a 130-scale-foot turntable. When I returned home with them, I had to figure out how to integrate them into the lay-

out somehow. I decided that I needed a more "down-to-earth" section in the ManCave for a yard and the roundhouse. So, I tore down the ceiling layout in the ManCave and rearranged the office space below to make room for the helix (now 15 layers), the yard, and the roundhouse to fit in. (See Figures 1-3.) Mrs. Da'Bob was not so sure that it would work, but it did. This was phase I of the layout.



Figure 4. A bridge spans one corner of the master bedroom.

Phase 2 of the layout was the expansion beyond the boundaries of the ManCave. The track now loops around the master bedroom and includes a 4' bridge made of Popsicle sticks going across the corner, by the windows. (See Figure 4.) This was to allow for Da'Wife's window decorations and curtains to remain functional. This room will eventually have a city and some fairy garden scenes up there.

"The jungle room," as we like to call it, has a fake tree in one corner; I decided to build a see-through tunnel going through its branches. (See Figure 5.) The track goes across the top of a bookshelf and around the space above the door, where a hand-built, wooden trestle scene is displayed. (See Figure 6.)

And Into the Future ...

Currently, the layout travels between three bedrooms through a return air duct space above the hallway. The jungle room will be the starting point for phase 3 of the layout. It has a section with two

switches that will route trains through the wall and to the rest of the house. This will be a closed loop so that the train will go through the wall, across a 3-track bridge into the living room, and then into the dining room. The new section will require about 300' of track, lots of lighting for the buildings and street scenes, and will include numerous bridges (between 7 and 10 feet long), and scenery.

The MAN Railroad

The railroad I model is a fictitious line named the MAN Railroad, which is an acronym of the three states in which I have lived most of my life: Minnesota, Alaska, and Nebraska. The locations along the railroad also are fictitious, but different places throughout the house represent scenes from each of the three states.

I mostly run UP and Burlington Northern equipment, though I also have some Alaska stuff (just not enough). If I acquire a locomotive from a railroad that doesn't operate in any of the three states, it must be in a museum or have a special paint scheme to be on the layout. (This is a rule I try not to break, but sometimes I do.)

The Advantages and Disadvantages of N Scale

The main reason I went with N scale is the number of things you can do in a much smaller space than in the larger scales. A helix in a 4'x4'

Figure 5. The jungle room tunnel. Passengers get a great view through the walls of the see-through tunnel.

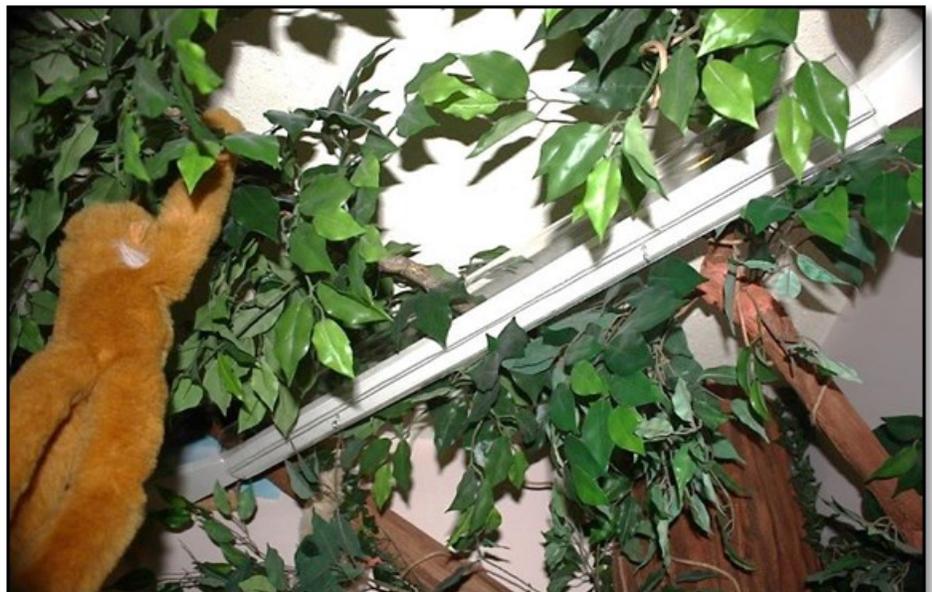




Figure 6. This hand-built, wooden trestle is located in the jungle room.

square space versus an 8'x8' space for HO was a big plus for me. I can have reverse loops and large yards that I couldn't have, otherwise. I like being able to run the biggest locomotive ever made on 18" radii without a problem, and have them look real doing it; a Big Boy articulates a lot going around tight corners, and in N scale it isn't that noticeable. A fact I like about N scale is that you do not need to be as detailed when modeling a scene as you would when modeling it in HO scale.

Unfortunately, sound decoders are not currently available for every locomotive, but the technology is getting better every year. And now that the popularity of N scale is rapidly growing, many manufacturers are including sound decoders in some high-end lines that they sell.

I do find it frustrating that HO versions of some locomotives and other rolling stock are released first, and then a year or so later the N scale versions are announced. HO usually gets the first-look, and N scale almost seems to be treated as second-

rate, in the eyes of many manufacturers. But I think things are getting better in this regard, and manufacturers are starting to consider the N scale community more when it comes to new product lines.

Advice to Prospective N-Scalers

If I were to recommend N scale to a new modeler, I would remind that person that he/she had better be willing to work with small things. The most difficult thing for me to do is put the spring back into a coupler assembly; if I have to remove a coupler, those things are really hard to put back together without a special jig to hold the pieces in place. You need small hands, magnifying glasses, and a lot of patience to work in this scale.

A new modeler also should have a good place to put a layout and a willingness to keep learning about the hobby, so they can keep their interest and improve their skills. If they want to just run trains but are not interested in improving their interest

and skills, that is okay. But in that case, I suggest that the modeler stick with a cheap HO set that goes around in a circle or figure-eight. N scale takes a lot more dedication to the hobby than most people think it does.

Conclusion

The MAN RR may seem crazy to most people because they think, "That isn't what I would do!" I wanted something that stood out from the crowd, a layout that would be easily identifiable when you see it in a picture or in a YouTube video. I wanted a challenge that would satisfy my dream of a whole house layout ... so far, so good.

The bottom line is this: if it isn't fun to make or use, it will never be fun for you to keep. 

About the Author

Bob (a.k.a. Da'Bob) has worked for the US Air Force for the past 35 years. Bob started playing with HO trains in 1976 and expanded his empire slowly over the years. He has backgrounds in carpentry, electronics, computers, photography, and videography; and these skills came – in part – from his model railroading. A few years ago, he found YouTube and discovered a way to share his experiences of getting back into a hobby that he had almost written off as a waste of time.

You can find more about Da'Bob's N Scale ManCave on YouTube at <https://www.youtube.com/user/DaBobsNScaleMancave>.

A Perspective On Track Planning



By William (Bill) J. Beranek —The Track Planner

Track Planning in N Scale

It wasn't that many years ago if someone had asked me to design an N scale layout with prototypical operations as the main focal point, I would have "rolled" my eyes and said "Seriously?" Today, when I'm asked, I used the same thought process as if I were designing in HO scale.

In some ways, N scale has advantages over HO scale. The obvious advantage being the amount of railroad I can fit into a given space.

The biggest change over the last two decades – in my opinion – is the reliability of N scale equipment, especially the micro motive power. For those born later than the mid-90's, you cannot even imagine how poorly N scale equipment ran. Indeed, some engines were so bad that no amount of "tweaking" helped. Gear ratios were set so high that it was almost impossible to get an engine to run at anything close to scale speeds. Yard switching was a real test of one's patience. And forget about running two units together; constantly jerking and fighting each other, whether the line was flat or a roller coaster of grades and curves.

So what changed? Two things: the manufactures (finally) started producing a better product, and DCC for N scale arrived. I think that the better equipment and the arrival of DCC moved N scale from the "toy" stage to a viable option for those who do not have the space for HO.

Today's N scale equipment still has issues and cannot match HO in performance or HO's ability to operate at super slow scale speeds, but it's getting better.

Today, we put N scale decoders in HO locomotive and think nothing of it. Things have come a long way in two decades.

N Scale Track Planning Today

So how does designing an N scale track plan differ from HO? The obvious difference between the two is space restrictions. Given that N is about half the size of HO, I can design for twice as much railroad in the same square footage.

In the past, N scale locomotives had problems pulling a long string of cars up a 2% grade. With the new mod-

ern six-axle diesel engines, steep grades are no longer an issue and can be incorporated into the track plan if need be.

Designing double-track mainlines in N scale does not create the same issues as HO. In HO, if you are to design and build a "believable" Class I double-track mainline, you'll need a lot of space. In most cases, the small available space compromises the tracks' radii and spacing. As modern N and HO equipment have gotten larger and longer spacing between tracks on tight radius curves has changed. No longer can I design 2" to 2-1/8" centerline to centerline track spacing in HO. Two and a half inches is the new norm. In N scale the spacing has increased from 1 inch to 1-1/4 inches.

Space Limitations

In HO scale, space limitation is always "the issue." Whether I'm designing a small table-top layout or I've got a whole basement to work with. The client's "givens & druthers" (to quote John Armstrong), seems to grow exponentially with the available space.

The main reason most clients model in N scale is that they lack space. For many, N scale was not their first choice but was rather forced upon them due to their space constraints. Most modelers can find space for a small HO scale switching layout, but few modelers have the space required to build a prototypical main-line operation 87 times smaller than the real thing.

Track vs. Scenery

In HO, few layouts have a good track-to-scenery ratio. There is usually too much trackage and not enough scenery. Trains tend to overpower the scenery. Whereas in the real world, exactly the opposite is true, scenery always overpowers the trains.

Here in Colorado, we have the amazing OC&E model railroad, located inside the Colorado Model Railroad Museum (Google it). The building measures approximately 10,000 square feet, with the layout occupying about 80% of the space!

It is one of only a hand full of model railroads in the world where the track-to-scenery ratio looks correct. Trains don't overpower scenery or scenes. While operating a train, you get the feeling of traveling through real scenes. It's a hard to explain this feeling, but once you've experienced it, you'll know exactly what I mean.

In N scale you can come much closer to experiencing that feeling, so

long as you have space and are willing to sacrifice trackage for scenery.

Therein lies the problem. Since the modeler has approximately twice the space to work with (versus HO), he or she wants and thinks they can/should run twice the number of trains on twice the amount of track. Using that theory, the N scale modeler has gained nothing over the HO modeler, except a lot more track and very little scenery.

Here's an idea: if you decide to build an N scale layout, design it in HO scale (within the existing space you have), then build it in N scale without adding any additional track. Simply lengthen the runs, increase the radii of the curves, and place the emphasis on scenery work. What you will end up with is a more believable layout.

Benchwork Heights

With an HO scale layout, looking "down" onto it does not affect your overall perspective and therefore for HO scale, I recommend benchwork heights between 42 and 46 inches. For the average person, 43 to 44 inches seems to be a good compromise.

N scale looks best when viewed slightly below eye level. In N scale, I recommend higher benchwork. Something in the range of 50 inches seems to work well. What looks good at 43 inches in HO scale can look awful in N scale. What some designers call the "helicopter view"

makes N scale layouts look much more "toy like." In my opinion, you should be looking "at the trains" and not "down on the trains."

When a passenger train or a long freight train rolls by at something close to, or just below eye level, the cars appear to be larger and the operator/visitor tends to forget they are actually operating or looking at tiny scale trains.

A side benefit of using higher benchwork is that it's much easier to see and uncouple N scale cars if they are closer to one's eye level.

2 Inches vs. 4 Inches

When designing multi-level layouts, one of the common questions is "do I really need a helix? Can't I get from one level to the next using continuous inclines?" The short answer is maybe! The realistic answer is probably not.

I won't go into the advantages and disadvantages of helixes, but here are the hard facts about continuous inclines: let's assume you want to maintain a maximum 2% grade and you want a minimum vertical spacing of 15 inches in between levels, you will need approximately 64 linear feet to gain the 15 inches at a 2% grade. Here's another way to look at it: assume your room measures 24' by 12' – a large room by most modelers' standards. To gain the required 15 inches, while maintaining a 2% grade, you would need to trav-



Video Chats! If you like real time video chats with other model railroaders, watch for these LIVE chats to join. Ask questions, help others with their modeling videos, or just join in live chat and simply "Chat!"

erse almost two and a half walls of the room!

When tracks loop back over themselves, in HO scale, you need 4 inches of clearance. Again, assuming you want to maintain a 2% grade, you will need 16 feet of run length to gain the 4 inches in elevation. In N scale you need 2 inches of clearance. That converts to approximately 8 feet of run length. As you can see, N scale has a big advantage over HO when it comes to tracks looping back over themselves.

That said, when designing multi-level layouts in N scale, there is no real advantage. If you maintain 15-inches of clearance between levels in HO, you don't want to drop to 7-1/2 inches of clearance in N scale. The height difference between levels needs to remain about the same, regardless of the scale.

Run Distances Between Towns

This is one area where N scale has an advantage over HO. When designing HO scale layouts where the modeler wants multiple towns along the mainline, you must be aware of not placing towns too close together. If you do, you automatically limit your train lengths. In my opinion, one of the most un-prototypical things to see during an operating session is a train's engine arriving in a town, before the caboose has left the previous town.

In N scale, if you have a medium-to-large space, this should not be an issue - assuming you're not running fifty- or sixty-car trains. A fifteen-car train in N scale will take up approximately five linear feet. With a

medium-size room, it is not that difficult to design a track plan where town placements are eight-to-ten linear feet apart.

Aisle Widths

This is the one area where there is no advantage or disadvantage to N scale. People are not getting smaller depending on what scale one chooses, and therefore aisle widths for N scale remain the same as HO scale.

Benchwork Widths

While aisle widths don't change, benchwork widths can. When designing an HO layout, I try to maintain benchwork widths of 18 to 24 inches, sometimes going with 30 inches in special situations.

I could go with 9- to 12-inch benchwork in N scale but I don't usually. If 18 to 24 inches fits the space, I'll go with my standard widths to leave more room for scenery surrounding the track.

The wider benchwork also allows me to use broader radius curves, incorporate longer runs between towns, include long sweeping curves and shallow turnouts on the mainline, and arrange more creative track arrangements.

Final Thoughts

Today, when I receive requests to design large N scale layouts with prototypical operations as the focal point, I no longer "roll my eyes." I think "great," because I know I'm not going to be limited by space. I can let my creative juices flow.

I can design a layout that I know will give the modeler many years of en-

joyment building and operating. It will have dramatic visual scenes; the track and trains won't overpower the scenery. The scenery will be the dominant feature of the layout, and visitors will be "wowed" upon walking through the door. 

About the Author

Bill Beranek - The Track Planner has over forty years in the model railroading hobby. Bill enjoys golfing, traveling, and of course designing "prototypical operations" focused track plans. He has been a member of a local 135+ member model railroad club since 2003 and has served twice as the club's president, twice as a board member, and is currently serving as the club's treasurer.

Bill is currently working on his latest triple-deck HO scale layout depicting the SP&S (Spokane, Portland & Seattle Railway) in southern Washington and the OTL (Oregon Trunk Line) on the upper level in northern Oregon in the mid-50s.

You can find more about Bill—The Track Planner at:

www.thetrackplanner.com.



COMMUNITY COLLAGE



In this issue, we present Sean Selley-West's N scale 3' x 2' layout named Mindelheim Avenue after the street on which he lives. The layout is set in the 1950s - 1960s era. Sean has been modeling N scale for about one year and he also has been modeling in OO scale for over six years. He lives in East Grinstead, a civil parish near East Sussex, England, with his wife and daughter.

If you would like to share pictures of your layout in the Community Collage, please contact us at YTMBeMag@gmail.com.



PICK ~~3~~ 5

In this issue we share with you ~~three~~ five YouTube Model Builders' channels that provide the community interesting ideas, tips, tricks, and resources. Here are three channels that will help you be more creative in your modeling efforts.



Ron's Trains N Things (Ron Marsh)

<https://www.youtube.com/channel/UCDijWTVFM8adgHWDpWjrY0Q>

Ron's videos provide you with modeling tips, tools, and techniques to help build your layout, and maybe save some time and money along the way.



N Scale Model Trains How To Channel (Mike Fifer)

https://www.youtube.com/channel/UC1Pg-TM-d_xiEWqaa0CfQMg

Mike's channel brings you a large number of videos to help you overcome common issues you may encounter in your modeling hobby.



Steve's Trains

<https://www.youtube.com/user/sgstrum>

Steve posts videos on model trains, particularly N scale, with a focus on building small and portable train layouts (including micro-layouts).



Mike's Trains

<https://www.youtube.com/channel/UCfpe5luO7PhuYINNNOCZ0gA>

Mike mostly does N scale, but occasionally does HO. His videos cover a wide range of topics, showing you how to build or improve your layout.



N-Scale Union Pacific Evanston Subdivision (Roy Smith)

https://www.youtube.com/channel/UC6bAJSz60IH7Eb_THff_xfw

Roy enjoys interacting with other modelers. On his channel, he shares knowledge and experience he gained as he builds and operates his layout.



Into Facebook?

Check out the YouTube Model Railroaders Facebook page!



The N Scale HUMP Yard — An Historical Layout

This month in the UP HUB, we are going to learn about the [N Scale Hump Yard](#) that was built by Union Pacific (UP) .

November is for N scale. So, sit back and “N-joy” the ride, because I am going to tell you the tale of the N scale model of the Hinkle/North Platte hump yard, how it was acquired by my club, and the future of this historic model railroad.

In the 1970s, N scale was just beginning to really gain ground in the hobby, and many model railroaders were beginning to take notice of this new scale that was smaller, lighter, and less expensive than the larger scales. Somebody else also noticed this and wondered if it could be incorporated into a training tool for new-hires of the Hinkle hump yard in Oregon. That man was John Kenefick, who was the president of Union Pacific at the time. Kenefick and Merrill Anderson were on the Terminal Planning and Design Group that was responsible for revisions of the Hinkle Yard from a flat switching yard to a hump yard. They were concerned that the employees, especially the new-hires in the Hinkle

yard, would have trouble with the transition from flat switching to hump operations. This is where the idea for a model of the yard came from. These men (among others) set into motion the building of one of the first railroad training tools to use models. This was the first model railroad paid for by a corporation and used as a tool for the betterment of its employees.

As the project entered the design stage, the men behind the project began looking at the various model scales. They decided that, based on what they were trying to convey with this model, the only logical choice was to use N scale. They then began looking for a builder that could do the work in a reasonable amount of time and budget. The builders they chose were Larry Martin and his son Dan. These two men built, wired, and added scenery to the 27' x 3.5' layout in a matter of a few days. Now, 40+ years later, it is still around and operational! I have been in contact with Dan Martin about the layout after he saw [my video of it on YouTube](#).

The yard model traveled the UP sys-

tem in a retired diner car that was stripped and repurposed to haul the layout around. The diner car hauled the layout for about 12 years before being sold to the Mexican Government, where it was used by their national railroad Ferrocarriles Nacionales de México (NdeM) for a period of about 8 years before being retired. The last report of the car is that it still is in Mexico and is in decent condition, thanks to the dry conditions of its location. The only known problem with the car is that the original trucks have been removed and replaced by a pair of freight car trucks. There was even the talk of trying to get the car back to North Platte to house the model again at the Golden Spike Tower in North Platte, NE.

Sometime in the early 1980s the model was rebuilt to more closely resemble the westbound hump of North Platte's Bailey Yard, and the model has remained in this configuration ever since that revision. About 1988, the model had outlived its usefulness at UP and was donated to the University of Nebraska – Lincoln (UNL), where it was used by the Engineering Department to teach



Screenshots from my video on YouTube of the Union Pacific N scale Hump Yard at the Lincoln County Historical Society Museum. Click [here](#) to see the video.

students the basics of hump yards and how to lay things out. There were a few model railroaders on the faculty and among the students at that time, and one of the perks they enjoyed was that when they started a club, they got to use the layout as their own. It was last used in the spring of 1995, and then it was tucked away into a storage area in one of the old buildings on campus. This is where it stayed until the fall of 2010 when UNL decided that the building that housed it would be demolished to make room for expansion of student housing. Luckily, someone at the university had the foresight to call the Golden Spike Tower in North Platte to ask if they were interested in the layout. However, the Spike Tower didn't have the room for it. Fortunately for my club, this happened on a Friday afternoon when one of my fellow club members, Mr. Eldon Walters, was

volunteering at the tower. He and his wife Janice left that evening to go get the layout.

Eldon was at the UNL campus first thing that Saturday morning to pick up the layout, and to the surprise of Eldon and the UNL staff, they couldn't get into the building where it was located. The building was to be demolished the following Monday morning, so if the layout was to be saved, it had to be

now or never. So, good ol' Nebraska ingenuity (and an axe to the padlock) opened the garage-type door to the storage area. Now the next thing to do was to get the layout out of the building. This actually proved to be rather easy, since the bench work under the layout has caster wheels for easy movement. But how do you get a 27-foot-long, almost 4-foot-wide layout from Lincoln to North Platte, a distance of about 230 miles? Well, you go down to Enterprise and rent a 25-foot box truck, that's how! But a 25-foot box isn't going to hold a 27-foot layout ... that is, unless you can remove 3 feet from the end of the layout for easy transport (which they did).

The layout currently is being housed at the Lincoln County Historical Society Museum in North Platte, Nebraska, where it is safe and sound while we restore it back to its for-

mer glory. We hope to have the layout fully restored within the next year or so, as we are working on a grant that will guarantee its safety into the future. As of September 2017, we have the outside loop fully operational, about 3/4 of the bowl tracks back to working order, and we have replaced 28 turnouts, with about that many more to go. There also is a hidden staging area with three tracks underneath which simulate the arrival of trains from across the system. I have a few videos of the layout on my YouTube channel, but nothing recent. We hope to get back to work on the layout this winter and get it back to full operation.

I hope you all have enjoyed this short look at the N scale Hinkle/ North Platte hump yard model. Until next time, keep those flanged wheels rolling, no matter the scale!



About the Author

Harry is a rancher in Nebraska who works with his father and grandfather to help run their 22,000-acre, 1,500-head of mother cow, ranch. Harry has been model railroading for over 20 years and models the Union Pacific Steam era from the 1930's to the 1960's, in central and western Nebraska. Harry is a Sustaining Member of the Union Pacific Historical Society and a member of the UPHS Streamliner 100 club. He is a National Model Railroad Association member currently working on his Master Model Railroader Certificate. Harry regularly posts videos on his YouTube page. You can follow Harry as he works on his 7th layout at <https://www.youtube.com/channel/UC6-MPHmYU3Cc2uEVfjZDIcQ>.

YouTube Model Builders Presents



Next Show—December 6, 2017
8 PM Central / 9 PM Eastern

All Newbies Welcome!

Please join YouTube Model Builders along with Chris Heili and guest panelists, who will build live, various projects using the Arduino platform. * Projects include lighting, sensors, servo control, and animation. Each project is quite easily accomplishable by any beginner hobbyist.

Let's explore and learn together some of the coolest projects in model railroading. We encourage you to ask questions directly to the presenters and chat live with them during the workshops. Share videos, pictures, and comments of your accomplishments on our [YouTube Model Railroaders Google+](#) community page.

* Participation in workshops requires an [Arduino based project kit and breadboards](#). For more information, please see the [YouTube Model Railroaders Google+](#) community page and posts announcing the workshops.

YouTube Model Builders eMag

A Free e-Magazine Produced by YouTube Model Builders.

Welcome to All New Subscribers!

Here are some themes we are developing for our upcoming issues:

- **Prototypical Operations**
- **Using 3D Printing and 3D Modeling in Model Railroading**
- **Model Railroad Photography**
- **Modeling Narrow Gauge**

If you are interested in contributing to the eMag an article or photographs related to any of the above topics, or even a topic you would like for us to consider, please drop us a note at YTMBemag@gmail.com. To learn more about the eMag, or to subscribe now, please visit www.YouTubeModelBuilders.com/emag.

We look forward to hearing from you soon!



A Chalky Situation



By Ralph Rnezetti

All photographs provided by Ralph Renzetti

Pigments or Chalks?

Okay, who moved my sandpaper? Where the heck did it go? I just had it yesterday!

How can I grind my pastel chalks without it? Wait, there is another way! What is that old saying? “Necessity is the mother of invention”?

I know ... since my wife is out, I can use the electric coffee grinder for chopping the pastels into chunks, and then I can use the old herb mortar & pestle to grind the chunks into powder. Yeah, that’s it! No, wait ... the mortar & pestle is a wooden utensil; it won’t clean up well, and I will be found out in short order.

Could it all be a dream? I think not. That was many years ago, and that’s the way it used to be. For some, it still is. Today we are fortunate that it’s done for us and sold in many forms: Pan Pastels, AIM powders, as well as Bragdon, AK, and Mig Ammo paint pigments which are for the more adventurous. We are lucky to

have a lot of these products available to us.

In this article, I want to discuss the different powdered products currently used in modeling. I would also like to point out that this is from my point of view, and I am not trying to tell anyone that my methods are better than theirs. I would like to highlight the high and (sometimes) the low points I have found through my own experiences.

Let’s Talk Pastels and Chalks

These small color sticks have been used by artists since the Renaissance period.

First, a dry medium is composed by blending pigments and binders. (Binders are the “glue” that helps the pigments stick together.) The mixture then is pressed into sticks known as artist pastels or chalks. (See Figure

1.) Modelers have used these pastels since the 1970s to add weathering effects to their models.

To prepare the pastels for use in weathering, one can grind the sticks against a piece of sandpaper. This results in a fine powder that can be applied to a model. A major problem with this approach is that the powder does not adhere well to the surface. And heaven forbid that someone should touch the weathered model, leaving huge fingerprints

Figure 1. A set of artist pastels. (Image courtesy of Amazon.com.)





Figure 2. Pan pastels with applicators. (Image courtesy of Blick Art Supply.)

or rubbing an area bare! The culprit risks the wrath of the layout owner or – even worse – could end up blacklisted.

So, the problem is poor adhesion to the model. If you try to affix it with some sort of spray fixative, most of the powder blows off. These pastels are better suited for laser-cut or cardstock structures that won't be handled much. The beauty of these ground pastels, though, is that there are many colors to choose from.

For those who insist on using powders, there is a more recent product named Pan Pastels. (See Figure 2.) These are an artist-quality product: soft pastel-colored powders in a unique and convenient pan format. Although Pan Pastels are meant for

use on paper, canvas, and wood, some modelers have had limited success on plastic models. They are available in 92 pastel colors, which have excellent color-fastness and are fully erasable. In my view, they perform marginally better than the old stick pastels because they contain an extra binder that helps the powders better stick to the model.

Don't get me wrong: some people swear by pastels or chalks. And others are not interested in change; this is known as the "good enough" theory! For those who are willing to learn a new process – or maybe have already come to the realization, there might be something better out there – I recommend pigment powders.

Powdered Paint Pigments

Powdered pigments (see Figure 3) are natural or synthetic materials that have been pulverized to a very fine particulate. These colored powders have served to impart life to some of the greatest works of art throughout time. Historically, they were primarily biological and mineral colorants, such as charcoal or iron oxides, while complex chemical reactions are used to obtain contemporary pigments. These pigment applications have been used to create stains on locomotives (steam, diesel, and electrics).

Unlike pastel chalks, pigments are pulverized to a much finer powder. Natural pigments have been mixed

with binders to create paints since “prehistoric” times. In many modern products, manufacturers add fillers to cut costs.

True pigments can become mixed with water, alcohol, mineral spirits, and other paints. I’ve even used rust-colored pigments with hairspray to create blistering rust on a locomotive rooftop. These powders can be fixed without the use of a product such as Dullcote or an artist fixative.

The key factor in getting any of these products to stick reliably is to use a dull varnish on the surface as a base before you apply the powders; my choice is to apply a light coat of Dullcote (clear matte finish for models) for starters. Once that first dull coating of varnish is done and cured, use a short bristle brush to scrub the powders into the surface. When you are satisfied with the results, use a light coat of fixative (again, in my case, Dullcote), and then you are ready for the next layer of color pigment, followed by fixative, etc. By layering colors, you can get more realistic results.

A List of Products and How I Rank Them

1. Artist Pastel Chalks: for paper artwork and some structures.
2. Pan Pastels: for laser-cut, wood, and paper structure (92 colors to choose from).
3. Bragdon Powders: great for any surface that is prepared right (mostly weathering colors).
4. AIM Powders: great for any surface that is prepared right (mostly weathering colors).



Figure 3. Powdered Paint Pigments. (Image courtesy of Blick Art Supply.)

5. AK & Mig Ammo powders: great for some rust colors and earth tones.

- ✓ <http://www.migjimenez.com/en/23-pigments>
- ✓ <https://ak-interactive.com/>

My Rankings (favorite to least favorite):

1. AIM Powders
2. Bragdon powders
3. AK & Mig Ammo
4. Pan Pastels
5. Artists Pastel Chalks

Some Useful Internet Links

- ✓ <http://monroemodels.us/aim.weathering.htm>
- ✓ <http://www.bragdonent.com/weather.htm>
- ✓ <http://www.panpastel.com/images/pdfs/colorchart.pdf>

Conclusion

In this article, I have discussed the differences between chalk and paint pigment, how they react on different surfaces and the type of modeling for which they are best suited. While chalks/pastels were not meant to be used on plastic models, with a little care they can be used to produce very convincing results, as you can see in Figure 4.

The information that appears in this article is from my personal experiences using these products, and from the manufacturers themselves. If you are having some success using chalk 



Figure 4. The turbo burn on this CP locomotive was achieved using the paint pigment technique described herein.

About the Author

Ralph Renzetti retired from Bell Canada after 42 years of service; 10 of those years were spent installing Standby Diesel Power for Bell. That dovetailed well with his love of trains, which had taken root when he was 8 years old.

When his eldest son was 20 years old, he asked Ralph, “Dad, when are you going to set up the trains permanently, instead of just at Christmas, around the tree?” So, Ralph told him, “You find me a spot, and you and I will do it.” So, they set up a layout in the crawl space. Ralph now is on his second layout (in a proper room).

Now that Ralph has started doing his weathering for customers, it has taken away from his efforts at completing his layout. Examples of Ralph’s work can be found on his Facebook Page, <https://www.facebook.com/WeatheringbyRalph> and on his YouTube channel, <https://www.youtube.com/channel/UCjt37b04U20FfqjA7RwwzdA>. On his YouTube Channel, you will find a two-part interview of Ralph done by Chris Lyon (CNLVN).

Ralph’s current thrust is to share his techniques with anyone who is interested. He says he wants to ‘pay it forward’ and share all his knowledge.

His pet peeve is that model railroad-ing magazines like MR and early MRC would always have buildings and scenery that are nicely weath-

ered but the Locomotives and Railcars look like they have come right out of the box - hence the beginning of his “Weathering a Touch of Yesterday” Facebook site.

You Tube

***YouTube Model Builders
LIVE! Want to see live
shows discussing modeling
techniques, YouTube, and
Web resources?***

***Check out the LIVE show
that airs monthly .
— Free to you!***

YouTube Model Builders Proudly Presents The FineScale Live Build Show!

Next Show: December 26th, 2017

Have you been reluctant to approach wood and craftsman structure kit construction? Are you fascinated with highly-detailed weathered structures and dioramas you see within model railroading publications? Then this is the show for you!

Join your host Andy Crawford along with Miles Hale & Ralph Renzetti as they take you from beginning to end of constructing highly-detailed wood structures and scenery - from box opening to complete dioramas.

In this show you will:

- Learn from a live, “camera-down”, clinic-style approach to construction.
- Obtain practical fine-scale modeling tips and techniques.
- Understand multiple methods for each step of the construction process.
- Develop your modeling skills and overcome the fear of fine-scale modeling.
- Build confidence in your own abilities as a modeler.

Please join us, build along, and learn as you go. We encourage you to ask questions directly to the presenters and chat live with them during the show. Then share videos, pictures, and comments of your progress on our [YouTube Model Railroaders Google+](#) community page.

YouTube Model Builders LIVE!

Join Us LIVE Every Month

Air Dates

YouTube Model Builders LIVE! show is aired monthly with a great line up of events and panel members.

The main focus of YouTube Model Builders LIVE! is to provide a Q&A style forum for YouTube modelers to interact with their favorite YouTube model builders.

Come watch and remember to register for great door prizes during the show! For the latest schedule updates go to www.YouTubeModelBuilders.com.



YouTube Model Builders

Live Chat / Presentations **HANGOUTS**

YouTube Model Builders Tuesday night Topic-Driven presentation now start at 8 PM CST / 9 PM EST and are scheduled for up to 2 hours so you have plenty of time to ask questions and learn. These presentations are also recorded for later viewing. For the latest schedule updates go to www.YouTubeModelBuilders.com.

Space is limited so make sure you don't miss these popular Hangouts!



The Glacier Express, led by an HGe 4/4 II, snakes out of a tunnel at the base of the Oberalp Pass. This section of the route utilizes the rack-and-pinion rail system to provide traction.

Photograph by David Gubler (own work). Used under GNU Free Documentation, Version 1.2 and CC BY-SA 3.0 Unported Licenses.

CLIMBING HIGH

On Board the **GLACIER EXPRESS**



By Jack Hykaway

The Alps were always a formidable obstacle to development and transportation in Europe, forming a divide between the east and the west. Ancient civilizations conquered these mountains, carving winding pathways through deep valleys and on the edge of high cliffs to bring their world closer together.

In more modern times, the Alps play host to world-class skiing, hiking, mountain biking, and other outdoor activities. The scenery isn't bad either – another reason why this mountain range is a favorite destination for holiday-seekers from every corner of the globe. Many of these recreational “hotspots” exist in the Swiss Alps – downhill skiing and

snowboarding being their prime attraction.

The Problem

The Alps' massive annual snowfalls at higher elevations – although perfect for skiing – proved to be a large obstacle in getting the tourists to the resorts high in the mountains. In the late 1920s when travel by rail was the way to go, the Swiss began construction on a railway to connect the ski resorts high in the mountains with each-other and with the rest of the country down below.

Connecting two legendary skiing resorts Zermatt and St. Moritz, the aptly-named *Glacier Express* opened for business in June of 1930. We all

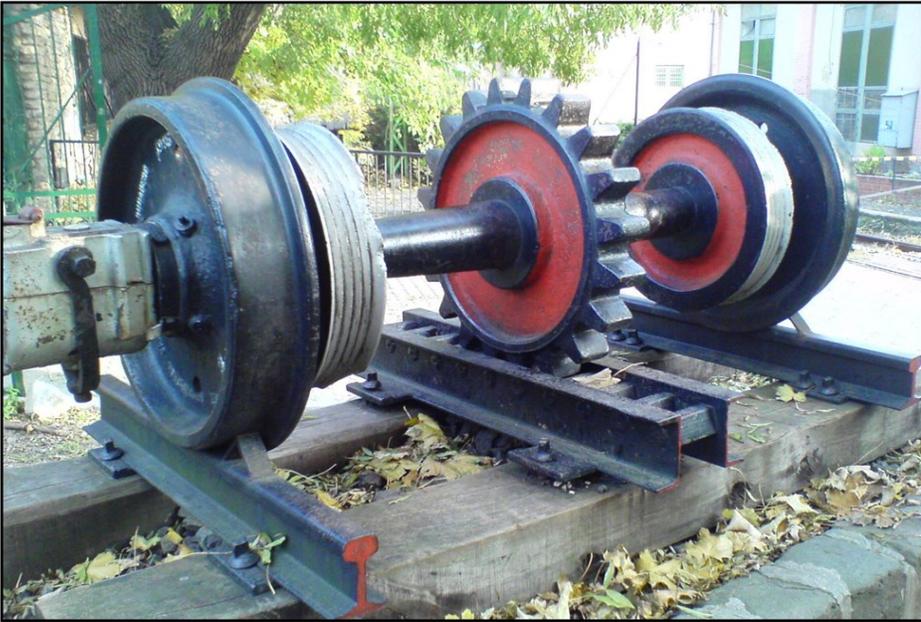
know one thing - trains and hills don't mix. The *Glacier Express* traverses some of the most inhospitable terrains on the planet. Several deep valleys and high peaks sever the landscape – and with the landscape the engineers' hopes of conventionally building a railway quickly, and cheaply.

Knowing that the proposed route for the *Glacier Express* included ruling gradients of nearly 13% – too steep even for a modern highway, the Engineers realized they could not use adhesion locomotives as used on nearly all of the world's flatter railroads. Depending on their load, conventional trains can only handle grades of up to around three or four percent before their smooth metal

The Glacier Express crosses the Landwasser Viaduct in Switzerland.

Photograph by Champer. Used under CC BY-SA 3.0 Unported License via Wikimedia Commons.





Above: An example of the rack-and-pinion rail system shows how the cog-wheel and the rack rail below it work together to provide traction.

Photograph by Tamas Szabo. Used under CC BY-SA 4.0 International and 3.0 Unported licenses via Wikimedia Commons.

Below: The Glacier Express is seen among the peaks of the Alps.

Photograph by Champer. Used under CC BY-SA 3.0 Unported License via Wikimedia Commons.



wheels would start to slide down the steep rails. Slipping down the mountainside was not an option. Engineers looked to a proven technology – a rack-and-pinion gear system to “hold” the train on the steep grades.

The stationary rack in the rack-and-pinion system is installed on only the very steepest sections of the route where the grade exceeds 7%. The strong steel teeth on the rack sit in the very middle of the two running rails. The other half of the system lies underneath the powerful electric locomotives used on this route. On top of its regular running wheels – which are powered for use on the flat sections of the route – each locomotive has two cogwheels. Located beneath each truck, the cogwheels are accepted by the rack in



In this panoramic view of the Glacier Express, passengers enjoy onboard service and amenities while taking in the views as the train passes through Andermatt.

Photograph by Hansueli Krapf (own work). Used under CC BY-SA 3.0 Unported License via Wikimedia Commons.

the middle of the rails. The teeth of the powered cogwheels allow the locomotive to get a grip on the steep track, dragging the 200-ton *Glacier Express* up the mountains, and resisting gravity on the way back down.

Through the Mountains

The route of the *Glacier Express* is well-known as one of the most spectacular train journeys of the world. Coaches with huge windows allow passengers to really take in the breathtaking views.

Starting at Zermatt, the *Glacier Express* begins a steep descent right out of the station, dropping a kilometer in the first hour-and-a-half of travel. The first low-point of the trip starts near Brig where the track follows the path of the Rhone Valley.

Through most of the flat sections on the route, the *Glacier Express* can travel at speeds of up to 100km/h. However, the train rarely reaches that type of speed – when the cog-wheel is engaged, the train is limited to a mere 40km/h. For this reason, the 290-kilometer journey takes nearly eight hours – allowing passengers to take in all the views.

After Brig, the first ascent of the trip commences. It's a grueling climb of 1,400 meters to the summit of Oberalp Pass at 2,044 meters above sea level – the highest point on its 290-kilometer journey. At the summit, the train is high above the tree line – a stark contrast from the Rhone Valley below.

Just as quickly as the train climbed the mountain, the locomotive begins a rapid descent into the Rhine Gorge – the lowest point on the *Glacier Express's* route. In the town of Disentis, roughly two-thirds of the way down the mountain, the train will swap out its cog-wheeled locomotive for a standard electric locomotive. The line from Disentis to St. Moritz was designed more conventionally with spiral tunnels (similar to a helix), and horseshoe curves so that the gradient never exceeds 4%. Although still steep, the locomotive assigned to this part of the route will have no trouble tackling the mountains.

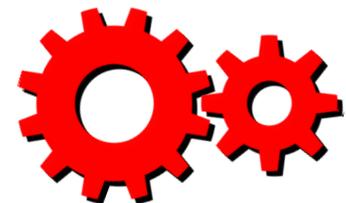
After crossing over nearly 300 viaducts and 91 tunnels, the *Glacier Express* reaches its final destination of St. Moritz, completing another safe and spectacular trip through the skiing capital of the world. 

About the Author

Jack Hykaway is a student, currently attending a post-secondary institution in his hometown of Winnipeg, Canada. He is an amateur videographer and writer and enjoys exploring and documenting nearby railroads and railroad operations in both written and visual formats of his work.

Jack joined the YouTube Model Builders e-Mag team as a content editor in 2013; his main focus of late has been producing his bi-monthly column Jack's Junction for the eMag.

Follow along with Jack's videography on his YouTube channel at <https://www.youtube.com/user/WinnipegRailfanner1>.

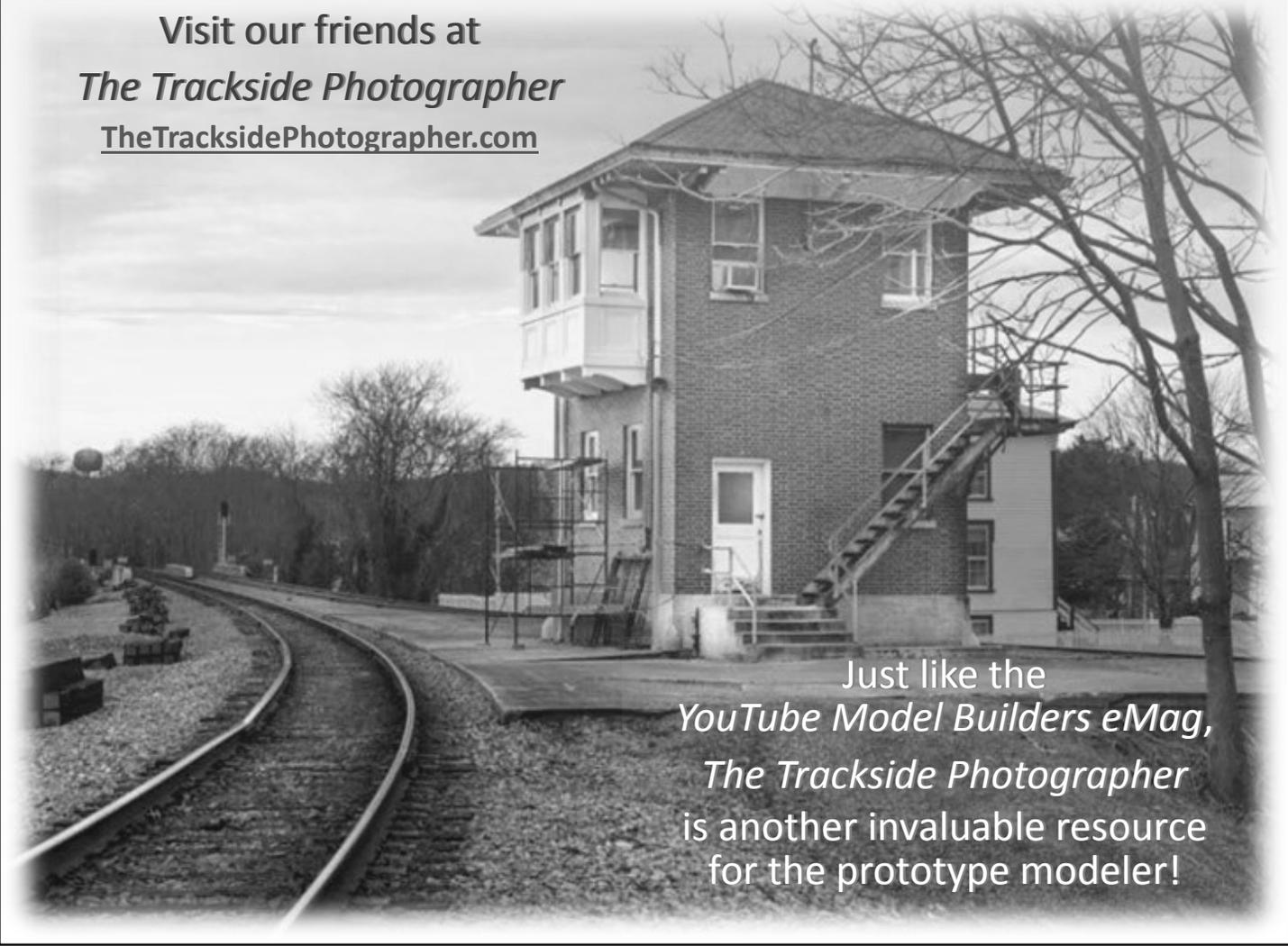


The Trackside Photographer

If you are looking for a wealth of interesting railroad lore along the tracks: depots, freight houses, signals, interlocking towers, bridges, trestles, shops, turntables and other trackside structures and equipment, then look no further than *The Trackside Photographer*.

Visit *The Trackside Photographer* and explore the visual and cultural landscape that the railroad moves through, with photographs of trackside structures and scenery and writing about the history of sites that are rapidly changing, or have already disappeared.

Visit our friends at
The Trackside Photographer
TheTracksidePhotographer.com



Just like the
YouTube Model Builders eMag,
The Trackside Photographer
is another invaluable resource
for the prototype modeler!

Food For Thought...

Why is this N thing becoming the “in thing”?



By Blayne Mayfield

N scale railroading is nothing new. According to [Wikipedia](#), the scale has been around, in some form or another, since 1927, and the “modern age” of N scale began more than 50 years ago. But in recent years, the popularity of this diminutive scale really has taken off.

As anyone who has been in the scale railroading hobby for very long knows, the smaller the scale, the more difficult it is to detail the models. As an HO scale modeler, I sometimes look at the O scale dioramas and layout scenes pictured on the Internet with awe and amazement. As one moves from O scale (1:48) to HO (1:87), and then on to N scale (1:160), achieving acceptable detail becomes more of a challenge – and sometimes a pain.

Fortunately, newer materials and manufacturing techniques – as well as the willingness of the modeling

public to pay higher prices for plastic models – have led to off-the-shelf locomotives and other rolling stock that have detail seen only in brass in the past, making N scale rolling stock a better value than ever before.

And, of course, the electronics found in locomotives continue to shrink in size, while growing in capabilities. Because of this, one easily can fit most, if not all of the features usually associated with HO or larger locos into their N scale counterparts. So, a modeler who would like to wade into the world of N scale does not have to give up the features with which he/she has become comfortable.

Even with these compelling rolling stock advances, one still needs the track to run those trains. Just a few years or decades in the past, many modelers viewed N scale track – and especially turnouts – as unreliable and frustrating to use (and I am be-

ing kind), causing many folks to avoid the scale. But now, track manufacturers have taken notice of the upswing of N scale popularity and are producing the track that looks and works great. (And, accordingly, they seem to be devoting more of their advertising revenues to this scale.)

Now I come to what is – in my opinion – a major, driving factor in the rise of N scale: millennial and post-millennial modelers (hereafter referred to as M&PMMs). As a definite member of the pre-millennial crowd (perhaps bordering on old fogey), I am fascinated by this ... but not surprised. One needs only to read model railroading forums to get a feel for some of the explanations.

For one, many M&PMMs live in housing that restricts the amount of space they can devote to the hobby. Perhaps they live in an apartment in a revitalized urban area. Or, they may be in a suburban house, but

“A major driving factor in the rise of N scale is the millennial and the post-millennial modeler.”

their growing families take up much of the available space. Also, many M&PMMs are more agreeable to “blended spaces” (i.e., spaces with more than one use). An N scale layout can fulfill their railroading dreams in just a little more than half the space needed for an equivalent HO layout. Tied to this, consider that many of us model what we grew up with; a lot of millennials grew up with commuter trains, so it would make sense that they would tend to model these lines. Commuter lines could take up more space than switching or round-and-round layouts, making N scale a sensible choice for limited space.

It also helps that M&PMMs have grown up surrounded by technology. Some of the things with which many older modelers might struggle or approach with apprehension are second nature younger modelers. One example is 3D printing, which represents a great way to introduce custom details to one’s modeling. (And, as better 3D printers and printing services become more cost-effective, the detail level improves for smaller scales, such as N.)

Another example of technology is what I refer to as the “custom electronics” arena; by this, I mean the use and programming of inexpensive microcontrollers (e.g., Arduino and

PICAXE), single board computers (e.g., Raspberry Pi), very small LEDs, small, Bluetooth speakers, and so forth on our layouts. The comfort level of M&PMMs with technology – as well as the widespread availability of plans, program code, and tutorials on YouTube and elsewhere on the Internet – make M&PMMs more likely to adopt and adapt these to support the level of detail they want in their N scale experience.

What about the rest of us, the “other-scalers?” Frankly, one factor that may keep some older modelers from taking up the banner of N scale is their eyesight; some of us don’t see as well as we used to, and working on models that are smaller than our current scale could present a challenge. Will the young N-scalers of today be the HO or O scale modelers of future decades? It’s difficult to forecast that.

For some of us, another influence may be inertia; we have modeled in some “N+” scale for long enough that we have accumulated quite a bit of rolling stock, structures, and so on. The thought of starting again in another scale can be intimidating. But this view of the hobby is short-sighted. Why not have layouts in multiple scales? If we don’t give N scale a try, we never will learn whether this is a viable and enjoyable

option for us.

And one doesn’t have to dive into a full-sized, N scale pike; a simple desktop layout (say, 1' x 4') should be sufficient to let you know whether this is a scale for you. Lay some track, build a few structures (perhaps simple cardstock types), add scenery the layout, and then buy/borrow a loco and a few other pieces of rolling stock. Besides being an interesting break from your other -scale activities, you could end up becoming a dual-scale modeler!

If you take up this challenge (and I hope you will consider it seriously), then use it as an opportunity to experiment with other things that you may not have tried before, but which help make modern N-scale modeling a great pastime: custom electronics, computer interfacing, 3D printing and so on. And, always be considering how to apply your newly-learned skills to your other layouts.

I know I plan to do so! 

About the Author

Blayne Mayfield is a university professor by day and an HO engineer by night. After a 20+ year absence from the hobby, he currently is working on a proto-freelance layout based on the [Frisco Railroad](#) in southern Missouri. Blayne lives in Stillwater, OK, and volunteers as a content editor on the *YouTube Model Builders eMag*. You can follow him on his YouTube channel by clicking [here](#).

Change

As the Greek philosopher Heraclitus put it “the only constant in life is change.” And everything continues to change all around us. This holds true for the modeling hobby and it holds true for the YouTube Model Builders eMag.

Change is part of evolution and evolution is part of growth. With this issue, we have completed three years of the eMag. And in those three years, we have evolved from a simple first issue to a complex and sophisticated publication. Change is a good thing because with change come new ideas, new thoughts, and new opportunities to provide a better product to you, our readers.

There are some things that have not changed. Our mission has been constant. Our dedication to the modeling community, our commitment to you and to the quality of this publication has been unwavering. The tireless amount of energy and work the eMag team puts towards each issue is impressive. Each member of the eMag staff puts in a countless number of volunteer hours to ensure you get a great product. And of course, the eMag is still free.

Are we going to continue to change and continue to evolve? You bet. Keep a lookout for it and be excited about the new things to come! Remember, change is a good thing.

~JD (Loggin' Locos)

This free YouTube Model Builders e-Magazine is produced by the dedicated YouTube Model Builders eMag team on a volunteer basis.

If you would like to submit an article for the YouTube Model Builders eMag or pictures for the Community Collage section, please contact us at: YTMBeMag@gmail.com. Submission guidelines can be found at www.YouTubeModelBuilders.com.

Disclaimer:

This is a free, community based, electronic magazine and as such all articles, photos, diagrams, and illustrations included within the articles and in the Community Collage section, as well as any opinions expressed within the articles are those of the individual author/writer and do not necessarily reflect the opinions of YouTube Model Builders Team or staff. We are in no way associated with, sponsored by, or compensated by YouTube, and/or Google, or any other entity.

Copyright 2014 — 2017 YouTube Model Builders eMag