Three Lakes Model Railroad Club **1st 100% Club in Wisconsin**
Volume 2, Number 7 **July 2011**

BRADLEY TURN: circa 2011
CANADIAN NATIONAL RAILROAD @ BRADLEY JUNCTION, WI.

By: Bob Lake

After getting together at Jim Browns house we piled in some vehicles and roared off to Bradley Junction to see the turn. What, you may ask, is so important as a change in direction of the rails? Well, you see, there is a Bradley and nearby is a Bradley Junction. Going through the junction are two sets of rails that at one time belonged to two different railroad companies. Now it is just Canadian National, which is in the process of buying up segments and whole lines of many different railroads. So, there is a main line running east and west and another feeder running north and south. The northern track bends to the west and joins the main line. This is NOT the Bradley Turn. The Bradley Turn is the locomotive and consist heading up the northern route and joining the main line at Bradley Junction. And now you may justifiable wonder if I have permanently lost my mind or just in the process of finding it again…

The train is named the Bradley Turn because on the way north, it distributes cars in the consist that can be backed into sidings. At Bradley Junction it turns around and heads south, again backing cars from the consist into sidings heading in the other direction. This makes for a lazy, slow motion milk run up and down that part of the State on somewhat of a daily basis… or so I am told. In any event I suppose the lassitude of the milk run eventually gets in your blood. Evidence of that was seen when the Bradley Turn announced its impending arrival with Bob standing in the

right of way examining the date stamps in the ties. Roger, Brendan, Al and the other Bob heard a whistle or a bell or something that Bob (me) didn't hear and started uselessly hollering at me to get off the tracks. What? What? Oh!! I could feel a bit of a rumble on the ties and rails and got the message in time to find a comfortable spot to view the oncoming but still hidden train coming up to the bend.

Up until that time we had made some wonderful discoveries. Alan found a few cast off iron spikes lying in the ballast, Roger noted the way the ties were dated (hammered into the wood almost like branding), insulating fishplates which fastened adjoining rails together and interrupted the signal telling the gates to operate and stop traffic approaching and hoping to cross the grade. The train if in the obvious position set off the signals and gates until it had completely traversed the crossing and again offered safety to the vehicles heading north and south. Since this was a junction, the signal to activate the gates originated from both the main line and the north/south bend. The insulating divide on the main line was placed less than one hundred yards from the crossing. We did not see the insulating slug on the bend, but it was much farther down the track. And so the point of this story:

Once the engine crossed over the insulator slug, the gates activated and stopped traffic. Then the crew consisting of an engineer and a conductor jerked and jiggled the engine hither and yon attempting to get the gates turned off and letting the traffic through. Somehow, no matter what they did, the gates remained down and in place. Eventually the conductor walked over (at a considered and deliberate pace) and raised the gates by hand on one lane, then motioned the traffic to weave through. Yes they did and gladly!!

All of this taking place for unknown reasons. Why stop the train there at all? Why not continue on, letting the gates rise, as they should once the train had passed? Why all the back and forth hunting for the 'sweet spot'. Finally the engineer and conductor consulted and backed the locomotive up on the main line sans consist and Wah La (voila) the gates raised and let the traffic through. Roger meantime had been directing traffic after the conductor wandered away and was finally relieved as the gates rose and the crew, tieing down (setting the brakes) the engine began walking towards us.

As they approached we couldn't help but ask the totally obvious question… What Was That?

After a moment of wondering who the heck WE were, the engineer carefully assessed the situation and said they were going to lunch and after some verbal high fives all around they continued walking on their way to join other rail guys working on the rails further up the line.

With a whole western prairie of mustangs under the hood, one has to wonder about an engineer walking! Maybe it is the humdrum milk run. Maybe it is a mis-located insulating connector between rails.

Bob Lake

Railroad Happenings: or Semi-local events…

July 16, 2011- Railfair- Copeland Park- LaCrosse, WI Info: www.4000foundation.com

August 13-14, 2011- Layout Open House- Railroad Lodge- SSSMRE- Sheboygan, WI 1001 N. 10th St. 10:00-4:00 Food & Refreshments

August 18-21, 2011- Soo Line Historical & Technical Society Annual Convention LaCrosse, WI Info: www.sooline.org

August 23-28, 2011- Clipper City Model Railroad Club Open House during the Manitowoc County Fair www.manitowoccountyexpo.com

September 18, 2011- WISE Division Meeting, 12:30 PM Best Western Airport, 5105 S Howell Avenue across from Mitchell Field. Three Clinics TBA

Sept. 24-25, 2011- Green County Model RR Show & Swap Meet- Monroe, WI Stateline Ice & Community Expo- 1632 4th Ave. W http://www.gcmrrinc.org

October 1, 2011- NMRA Winnebagoland Division Fall Meet- Lakeshore Lanes- Sheboygan, WI Info at: www.wld-nmra.com

October 1, 2011- 2nd Annual Hope Train Club Show & Sale- Wesley Center 199 E. Jefferson St. Waupun, WI (920) 324-2350

October 15-16, 2011- Layout Open House- Railroad Lodge- SSSMRE- Sheboygan, WI 1001 N. 10th St. Food, Refreshments & Fun 10:00-4:00

October 15, 16, 2011 Cisco Junction Train Show, Cisco Center, 325 Eldon St Cisco, IL Cisco in between Champaign & Decatur, IL: Tentative: Monticello RR Museum will operate 401 Steam Loco: contact Don@ciscojunction.com or 217-669-2261.

October 16, 2011 – WISE Division Meeting, Veterans Terrace, Burlington, WI

October 23, 2011- Cedar Creek Central Model RR show & Swap Meet Circle B Recreation -6261 Hwy 60- Cedarburg Info at www.lammscape.com/cedarcreek

November 5, 2011- Winnebagoland Division Annual Operating Session- Waupaca, WI Info at: www.wld-nmra.com

November 12-13, 2011 – Trainfest, State Fair Park: Note: Early Bird Tickets are $8 at Milwaukee area hobby shops Greenfield News and Hobbies- Greenfield, Hiawatha Hobbies- Waukesha, Silver Spring Hobby & Games- Milwaukee, Sommerfeld's Trains- Butler, South Side Trains- Milwaukee, Walthers Terminal Hobby. Outside metro Milwaukee: EngineHouse Service- Green Bay, WI , J & D Whistle Stop- Sheboygan, WI, Lombard Hobbies- Lombard, IL, Madison Hobby Stop- Madison, WI (more later).

Signals for the west end of Bradley Junction
with homemade dwarf signals

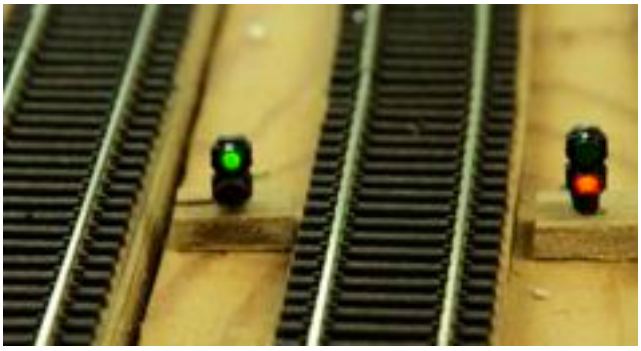
by P.A. Wussow

To finish my National Model Railroad Association Achievement Program I added signals to a pair of junction turnouts in the section of the Perch Lake & Superior, my HO model railroad in Glen Ellyn IL, known as Bradley Junction.

The task is to set up an interlocking with the junction turnouts that is signaled and has power blocking so that a train running the signal will not reach the turnout set against its path and will stop short of blocking the clear route. I did this with two types of dwarf signals using LEDs.

One set used a single lamp head with a bi-colored LED (Figure 1 to the left) and the other set had to lamp houses with a green and a red LED (figure 2 below left).

These signals were placed in a location that allowed clearance of trailing point switches. A single head searchlight signal is placed on the main line to indicate the position of the turnout. (Figure 3 below right)



These signals are part are part of the AP EE requirements under part 3-5 requiring two turnout junctions with electrical interlocking and protecting trackside signals.

The installation of these signals used the connections on the Tortoise Switch Motors. A single set of Single Pole Double Throw (SPDT) contacts were employed. The center contact is connected to the one line to wire to the signal and the two poles are connected to +12 volts and -12 volts. The other lead from the signal is connected to a common ground.

Care must be taken to connect the signal wires in the correct polarity so that they show the correct aspect (color). The signals on the leads are connected in the opposite polarity so one is red and the other is green.

The control panel for the Bradley Junction Interlocking is shown in Figure 4 and includes the diagram of the area covered by the tower, the switch (turnout) toggle switches and the signals located on the diagram. In an interlocking tower the switches are numbered with odd numbers and the signals with even numbers. An example is the interlocking panel at Rondout IL on the former Milwaukee Road main line between Chicago and Milwaukee shown in Figure 5.

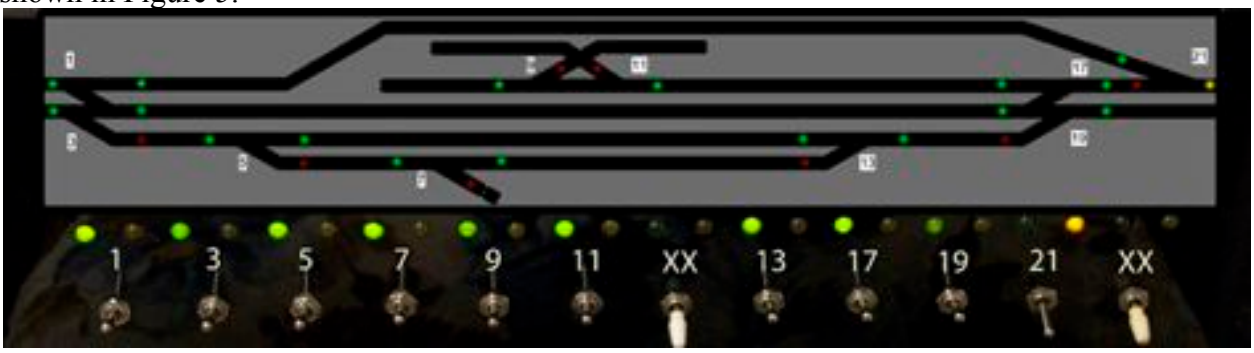


Figure 4

Figure 5

After putting in the signals for the AP requirement I found they made the operation easier for the engineers and the tower operator. Here you see me at the control panel and the West end of the interlocking is over my left shoulder. With a guest I can't see the tracks only the panel lights.

These facts and some near cornfield meets at the west end gave me the idea that I should design a set of dwarf signals for the west end of the junction. The problem is that there are three turnouts; two are in the form of a crossover and one turnout leads to a passing siding and access to the local yard. Figure 6 shows the views from the east and the west.

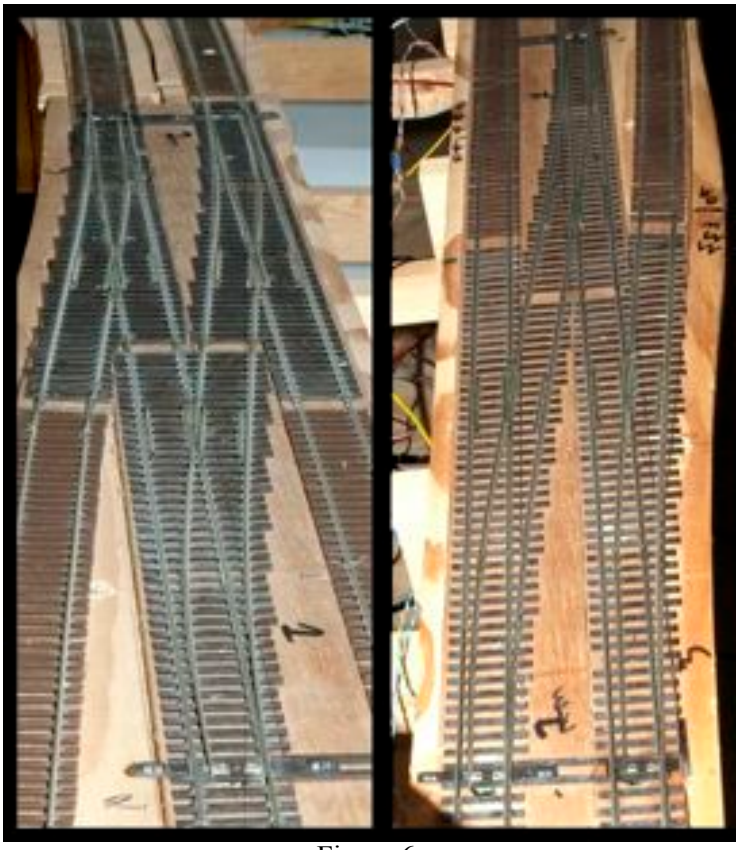


Figure 6
View looking West View looking East

The challenge in this case was to build signals and the necessary circuits to control them with only what I had on the layout, three tortoises switch machines and five LED Signal heads which I had to build. Three of the signals only need to indicate clear (green) and stop (red) or approach speed (yellow). I use the rule that a single dwarf signal is red to

indicate stop, green to indicate a clear path and yellow to indicate alignment to the diverging route.

In my Bradley Tower the turnouts (switches in prototype terms) are numbered with odd numbers and the signals with even numbers. Eastbound, entering the Bradley Interlocking the 2 turnouts that make up the crossover are switch number one and the turnout to the passing siding and yard lead is switch number three. Signals for these switches are number two and four at the west end.

Signal two is simply a green, for clear (normal), or a yellow for diverge (reverse) on the crossover. Signal four on the right hand track needs to have three indications; yellow for reverse into the passing siding, red if the crossover is in reverse, or green if each switch is normal providing a clear straight path into the interlocking.

West bound trains may come from three tracks and need signals to govern their movement out of the Interlocking. Signal six in on the west bound right main and only needs green for clear and red for stop (switch one is reverse). Signal 8 is on the eastbound main or center track and must have a green, clear straight out of the interlocking, yellow for taking the crossover on to the west main, and a red indicating switch three is in reverse to clear a train out of the siding and onto the east main. Signal 10 is a simple green as a clear onto the main or a red to stop and call for signals. I created a truth table (Table 1) to help me understand the way I might connect the signals before I started to build them.

Perch Lake and Superior
Bradley Junction Interlocking
West end

Switch 1	**Switch 3**	**Signal 2**	**Signal 4**	**Signal 6**	**Signal 8**	**Signal 10**
Normal	Normal	Green	Green	Green	Green	Red
Reverse	Normal	Yellow	Red	Red	Yellow	Red
Normal	Reverse	Green	Yellow	Green	Red	Green
Reverse	Reverse	Yellow	Yellow	Red	Yellow	Green
Signal Head		Green	Green	Green	Green	Green
		Yellow	Yellow	Red	Yellow	Red
			Red		Red	

Table 1

With this table I was able to determine that using polarity shifting from + to – was not going to work for these signals. The location offered 3 tortoises switch machines with 6 SPDT contacts. 2 sets were used for frog power and the rest were available for my use. The red and green were easy but the yellow would be the challenge, if I were to do this

without computers or logic circuits. I decided to use the +12 volt signal line that is available under my track to power all the LEDs and found I could use 2 sets of SPDT contacts, one set on the crossover (Switch 1 contact set 3) and one set on the siding motor (switch 3 contact 2) Figure 7 shows the flow of electricity to the LEDs via the Switch motors contacts.

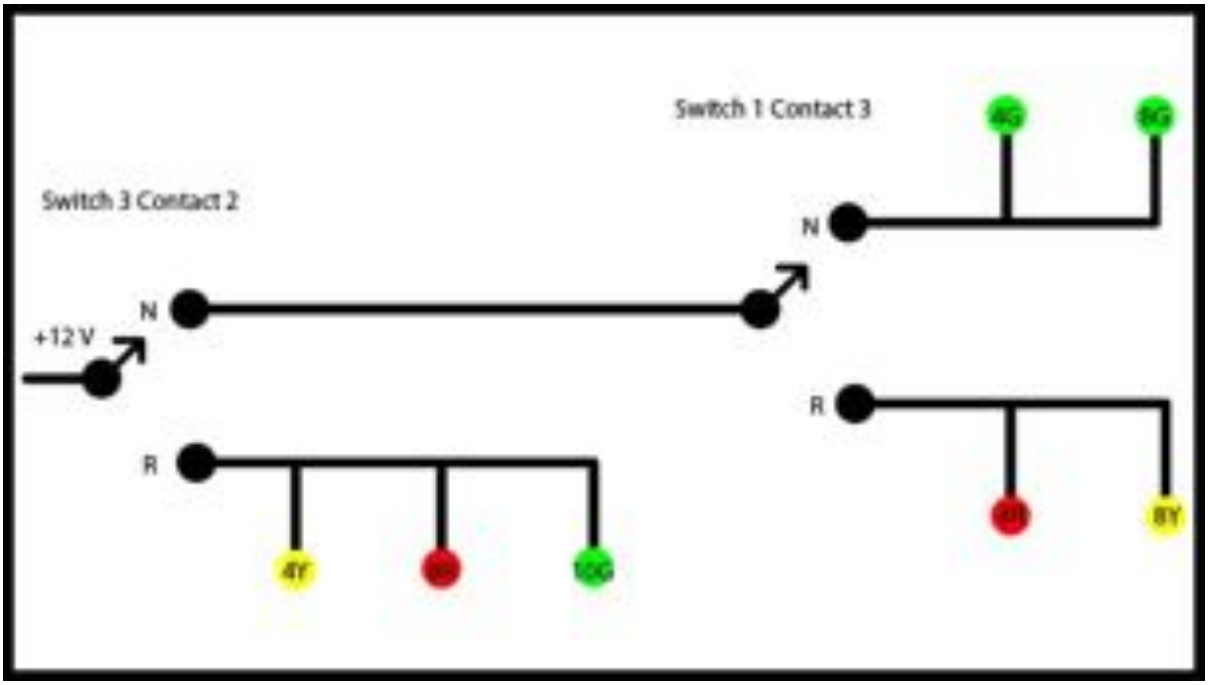


Figure 7

Signals # 2 and #6 run off contacts on Switch 1 contacts 2 in normal connections which do not require special connections

Figure 8 shows the Dual voltage used with signals #2 and #6. In this configuration there are only two wires from each signal to connect to the terminal block.

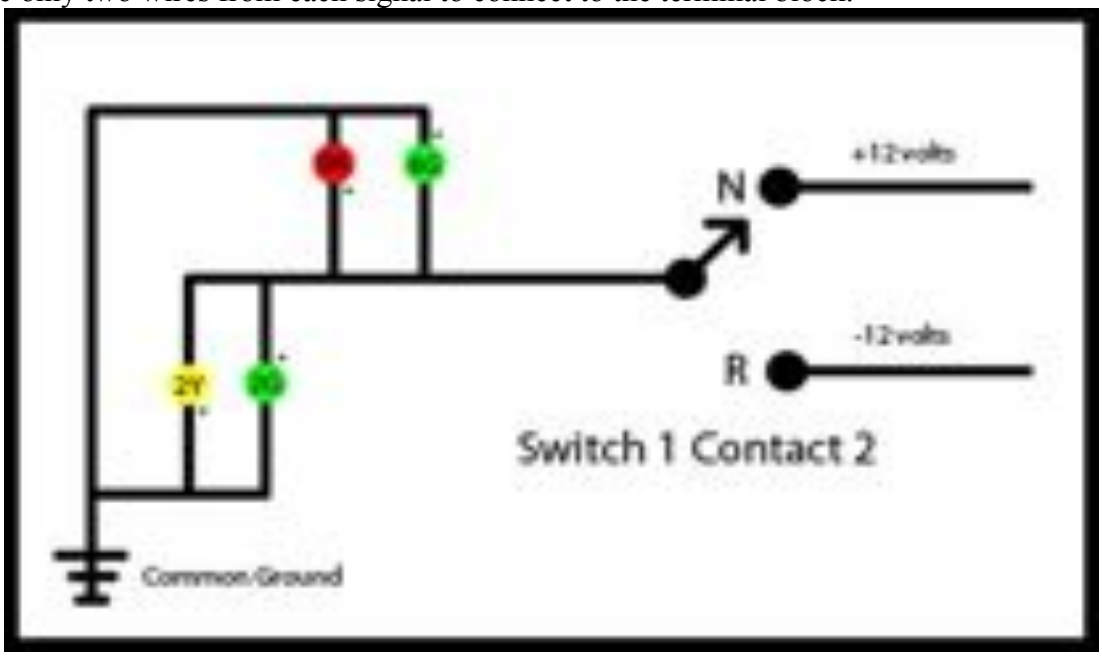


Figure 8

To make the signal system a reality I needed to create the signals 2 though 10 with metal castings of dwarf signals and Light Emitting Diodes. In the late 1960s I purchased a box of dwarf signal heads some with grain of wheat lamps and others without anything in them. They set on a shelf and in boxes for decades but when I needed to signal some passing sidings on my layout for operation from locations where I could not see the control panel or the points of the turnouts I brought out the box and started to turn them into useful signals.

The foregoing, written by Paul A Wussow is a testimony to patients, perseverance and a steady hand when you look at the tricolor signal head on a thin dime. ed

NMRA Membership:

by R.G. Blocks

Encourage a friend. Sign up a pal. NMRA is the lever arm that helps the manufacturing arm of our hobby doing things to a common standard. The NMRA seal that you see on product at the hobby shop is an indication that products will work together. Our TLMRC exists to reflect our support for that standard and help its members support each other thru our mutual education.

This year we'll be working on a variety of tasks. Clinics to be sure, newsletter articles, joint meetings with other clubs, perhaps a trip or two to visit others. Topics we've heard need expression include: Free Mo, track laying, turnout (switch) construction, signals and their meanings, foam rock carving, Mountain building, Bridge building, trips folks take involving rail all a continuation of last year.

The Three Lakes Model Railroad Club Website is up and running at www.tlmrc.org . Contact Paul A Wussow at his email address: PaulWussow@WindyPines.net if you'd like to have a link to your own personal rail empire on this educational railroad portal.

View from the (Control) Tower

I hope you are all having a fulfilling time this summer. It sure has been full for me, some happy and some sad. On the sad side we have had a number of members have sickness and even death in and around their families. Our thoughts go out to all of you how have suffered loss in the past month or two.

On the happy / busy side we have built some modules developed clinics and achieved some achievements. Roger and I built a module set and displayed it at the Three Lakes "Shoot out "boat race and fly-in. We added trains to make the event Trains and Boats and Planes. While the club did not have a boat there we did have a train (On30) running on the modules at the airport terminal all day for visitors to see as they looked over the collection of 45 airplanes that came to the fly-in. We also had a Cessna 172 that Roger and my father-in –law flew in. Many guests checked out the little train with all the bells and whistles as it switched freight and passenger cars.

I had the pleasure of controlling the layout for the day while Roger took Young Eagles through the Experimental Aircraft Association (EAA) Program. I also handled the airport radio, monitoring traffic and now and then warning pilots of interfering traffic that included deer, other airplanes coming from the other direction and oh yes people. Believe it or not every now and then people would walk out on or across the active runway. I guess we need Operation Lifesaver for airports. "Anytime is Plane Time"
I look forward to meeting with as many of you who can make it up to our next meeting. It seems that while we have a larger population in the summer we also have strong competition with our railroading. If you get a chance get out and take some photos of railroads you may visit and share them with us. I will be glad to post photos of prototype and model railroads on the club web site www.tlmrc.org .

Let's try to keep it a happy and safe summer: Paul Wussow, Superintendent TLMRC