

THE ORDER BOARD

A Publication Of The
Cumberland Division SER-NMRA Inc
Tennessee Central Railway Museum
Nashville Chapter NRHS

Vol. 23 Issue 7

2004-2005 Schedule

July 22 C Div/TCRM Thursday Night Meeting at TCRM
Aug 14 Nsv Ntrak at Viola Family Days in Viola TN
Sep 4-5 Day Out With Thomas at TCRM Nashville TN
Sep 10-19 Nsv Ntrak at Tennessee State Fair (possible)
Sep 11-12 Day Out With Thomas at TCRM Nashville TN
Oct 2 Watertown Train Robbery Trip
Oct 9 Nsv-Watertown Mile-Long Yard Sale Trip
Oct 9 Cookeville-Watertown Mile-Long Yard Sale Trip
Oct 16 Cookeville Super Fall Foliage Trip I
Oct 23 Cookeville Super Fall Foliage Trip II
Nov 10-13 Whistlestop Weekend at Adventure Sci Center Nsv
Nov 04-Jan 05 Nsv Ntrak at Adventure Science Center Nashville
Dec 4 Nsv-Lebanon Victorian Christmas Trip
Dec 11 Nsv-Watertown Santa Trips (Two)
Feb 12 Watertown Valentines Day Murder Mystery Trip
Feb 26 Watertown Mother Goose Fairyland Trip
Mar 19 Watertown Easter Bunny Trip I
Mar 26 Watertown Easter Bunny Trip II
Apr 9 Watertown Train Robbery Trip
Apr 23 Watertown Mile Long Yard Sale Trip

Program Notes

July- Jim Paty will present a program and videotape on railroad motor cars. Jim has worked with railroad motor cars so long Fairmont is his middle name.....

July 2004 Meeting Host Committee

Jim Adair	Steve Arnold	Nathan Baker
Craig Barnes	Brandon Baxter*	Terry Bebout
Barry Beckett	George Benson	James/Twila Bilbrey
Marvene/Brenda Bilbrey	Wayne Bowen	Roy Brantley
Paul Brock	James Brooks	

*Host Committee Chair in **Bold** type

Hobby Shop News

Still available - the **Cumberland Division** Red Caboose-produced HO scale 500 series & 7900 series TC Ry 40' box car kits - 2 different numbered cars for the 2 series (TC 501, 537, 7923 & 7942). These cars include NMRA RP25 metal wheelsets with narrow wheel treads and realistically tapered metal axles. Price for local delivery (no shipping involved) is \$16.50 each, \$64/set of 4. Mail-order price is \$17.50/car postpaid, \$68/set of 4 postpaid. Notice about these cars has appeared in the June 2004 **Model Railroader**; if you want your set before they get gone, be sure to stop by the hobby shop and buy your set.

New in the shop are some Broadway Limited HO locomotives with sound already installed. Also in stock are the MicroMark HO truck journal reamers that clean out the conical bearing surfaces and drastically increase the rolling quality of HO trucks. Stop by and see what else is new.

Day Out With Thomas – Workers Needed!!

We are less than 60 days away from showtime with **Day Out With Thomas 2004**. The Thomas managers are contacting all members for help on different parts of the labor-intensive activities. Please make a commitment to help. If you have not been contacted by our July meeting on the 22nd, please let me know.

Don't forget- publicity efforts at places like those below-

Day Care Centers	Summer Schools	Drug Stores
Hardware Stores	Department Stores	Grocery Stores
Toy Stores	Mall/Workplace Bulletin Boards	
Fast Food Restaurants	Churches	Park Bulletin Boards
Video Stores		

Nashville Ntrak News

By **Bob Hultman**

Nashville Ntrak set up their Ntrak modular RR at the Smyrna Library the weekend of July 10-11. The N scale modelers reported a very successful setup, handing out many copies of Day Out With Thomas flyers and excursion train flyer. Many, many thanks to **Nashville Ntrak** for promoting model railroading, TCRM and our excursion trains and other activities!

Another piece of good news is that **Mike Curtis** has been pursuing getting **Nashville Ntrak** into the 2004 TN State Fair. Not taking "No" for a final answer, he has been making inquiries & found the person who influenced exhibitors getting into the Creative Arts Bldg is no longer around. **Mike** reported that it's better than 50-50 they'll get into the CAB for the 2004 Fair. Keep on trackin, Mike!

July 4th Car Hosts' Trip A Great Success

The car hosts' train trip over the July 4th weekend to Watertown was a great success! The weather was hot, but the beverages of various types were cold, the ice cream delicious, the fireworks long-lasting on Saturday evening and the Sunday morning breakfast by **Frank Holt's** food service crew was simply outstanding! Report is that we'll do this same thing next year the weekend just before the 4th of July.

Locomotive Maintenance Series

By **Bob Swanner**

Starting in this issue of The Order Board is a series of articles on model railroad locomotive maintenance.

Gear pivot pin broken off- A loco with a wobbling main drive gear limped into the engine terminal. One of the bearing pins holding the gear straight in mesh & alignment was broken off flush with the gear body inside one of the drive trucks. The gear

NEXT MEETING Willow St Building Thursday July 22, 2004 7:00 PM

wobbled horribly & made the most woeful grinding sounds. Needless to say the loco didn't motivate too well. I disassembled the truck & removed the gear. Yep, no pin on one side. I miked (measure the diameter with a micrometer) the pin on the other side & found a small sized paper clip was the same diameter. I drilled a 0.0265" hole half way through the gear which was 0.0015" smaller in diameter than the 0.0280" paper clip. I coated the paper clip pin with CA (cyanoacrylate: super glue) & pressed it into position. After cutting off the excess length I installed the renewed gear into the truck. Since I drilled the pin hole perfectly square & on center, the renewed gear performed flawlessly.

2- Gear tooth broken- I did the next repair as Karl Shaffer suggested... thanks, Karl. This repair is to reinstate an Athearn Genesis Mikado back into revenue service. I used a paper clip 0.0280" dia. which was the same width as the gear teeth at their roots, fore & aft. Since the gear was 0.066" wide I had 0.019" gear material on either side to support my repair pin. I drilled down 0.100" to give it a good bite. I stuck the paper clip into the 0.0265" drilled hole after coating it with CA (see translation above). I discovered the pin was crooked counter clockwise by 3.74 degrees, so I had to bend the paper clip 3.74 degrees clockwise or 34 degrees 44' 44", to fit it into a true vertical & tangent to the circumference of the gear center in relation to the other gear teeth so that function would be unimpeded. The repair pin was straight & square in the other two planes. Then I ground the paper clip down with my Dremel tool to the same shaped taper as the remaining existing gear teeth. I tried the gears by turning them with my finger while dragging against them & I could feel no discernible difference. The gears turned very smoothly. This repair will have a chance to have a good life expectancy for two reasons: First, the gear set is of the hunting type, & Two, while it's in the parts drawer waiting to reenter revenue service inside a locomotive no wear at all is being encountered.

Setting drive worm/driven gear clearance- Some locomotives use a simple but annoying drive train. It could be annoying because it could require radical repairs if sufficient parts could not be procured. The main drive worm gear is mounted on the motor armature shaft. The worm drives the gear mounted on the locomotive driver axle. A problem arises when the worm and the gear are not meshed deeply enough to have a respectable longevity. Either the worm is just barely tipping the drive gear so in a short time the edges of the gear teeth &/or worm teeth wear down so much that a grinding sound is heard but no forward/backward motion is perceived. Or the worm is more deeply meshed into the driven gear so that when a failure occurs all you see are chips that used to be gear teeth. The solution is the same for both malfunctions as long as there are usable gear teeth remaining.

The reason we are doing this repair procedure is to have our driving gears as fully meshed as possible without binding the motor from turning so our gears will have a maximum longevity. Finding shimming spacers is easy. Look at your Kadee red 0.015" thick washers. Then look at your Kadee 0.010" gray washers. If you start out with a red 0.015" washer & you need to reduce thickness 0.005" what do you do? Change red to gray. You've just reduced your shim thickness 0.005"!! Vice versa works by taking out the red & adding two gray etc. When you are finished, the motor mount screw will be tight & the motor will be able to turn as freely as when its gear was meshed loosely. As a check, if you would remove 0.005" shim the motor should not be able to turn, add 0.005" it should run freely. First remove the motor, grind or

cut the frame where the motor is mounted so the gears can be set deeper into mesh with each other. Remount the motor & loosely snug the motor mount screw. Momentarily apply power to the motor. Can it turn? At this point it's good if it can't. (If it can turn at this point you haven't removed enough frame metal.) Remove the motor & put shims between the frame & motor. Fully tighten motor mount screw. Now can it turn? If yes, remove shimming a small bit, 0.005", at a time until the motor can't turn. Then add back the last 0.005". Now the motor should be able to turn. This last bit of procedure is to "fine tune" the gear meshing for maximum longevity & reliable performance. Do yourself a favor: don't rush or be sloppy here. To do so now could negate a lot of your efforts.

4- Installing a transmission- Should you discover to your chagrin that your drive worm/driven gears have already reduced themselves to chips where teeth once were, you move on into this little project: installing a transmission in a locomotive that previously had only two driving gears. First, get the transmission you plan to install. Second, read the transmission directions. Third, read the transmission directions. Measure the transmission & survey where it will need to fit in the locomotive frame. Determine where, & how much metal must be removed. It was suggested to me to get a cutter bit for my Dremel tool. I did, & it worked like a charm. The only filing I needed to do then was to square up the corners & straighten the sides, then the transmission fit in like it belonged there.

Another tidbit of info that could help: before you remove & press a driver off your steamer's axle be aware of the relationship between the left & right side drivers. One side of some drivers is insulated. The insulated driver must go back on the same side it came from, if not, your loco will be shorted out. Other drivers have some kind of metal power pick up between the axle & wheel rim, put'em where you got'em. The crank pins, where the side rods attach, are not parallel. Usually the right side, engineer's side, is 90 degrees rotation ahead of the left side looking forward. The term is quartering. If the drivers are not set back on exactly where they came from your loco will not be able to turn a wheel. It will be locked up so badly it only can move about 1/4 turn or even less. When pressing your wheels back on be sure to have the NMRA standards gauge on hand. The wheels must be centered, parallel & spaced the correct distance apart from each other. Other than that, it's a piece of cake. If you get tangled up you can call me for advice. How's that? P.S. be sure to follow the transmission manufacturers' directions, including lubrication.

5- Reinforcing a transmission- I had a NWSL transmission that stripped its plastic idler gear. So I took the brass gear intended to press onto the driver axle & tried it on for size. The diameter & tooth pitch was the same but the shaft hole was a bit loose. I put a tapered roll of thin plastic shim in the gear hole then pushed the steel idler gear pin into the brass gear. I had to assure that the plastic shim was the right thickness so it would not be cut by the pin as it was being pushed into the gear but only be compressed for proper retention of the gear. Otherwise it would be running off-center with disastrous results. After trimming the excess plastic I assembled the transmission & filled it with gear oil. The gears meshed properly & all were smoothly turning on center.