

SIERRA CENTRAL HERALD

Official Publication of the Sacramento Model Railroad Historical Society, Inc.



“Under The Hard Hat” by President Bob Rohwer

During our May open house we were able to check the reliability of the railroad, test the new signal system and implement a train order system. This was a big help in setting our goals for the construction period that began with the end of open house. Some of the initiatives that resulted are as follows:

1. We have identified several track problems. A number of switches are slightly out of gauge. Though the railroad was very reliable during open house we will make a number of repairs. We will continue to improve the track. The frogs on several switches were not powered. We will have to adjust the micro switches on the switch machines to insure that the power is applied to the frog.

2. Don Butler continues the huge effort of installing the Chubb/EDA system and writing the computer program for it. The signaling system during the open house was very impressive. We received many positive comments from our guests. Don would appreciate some help if you would like to volunteer. One problem that developed was train detection, which is needed to make the system operate correctly. The Board of Directors implemented a standard that requires that trains used on the layout have detection. At least one in four cars should have detection. The SMRHS will provide the 10k surface mount resistors needed to make detection wheel sets. In the next couple of weeks we will start making detection axles. Bring your wheel sets or cars in so we can install the resistors.

3. Big thanks go to Tim Grover for taking the lead on train order operation during the open house. Train dispatching went very well and most of us enjoyed ourselves. Work will continue on developing operations. Scott Inman is putting together an operation group that had its first meeting on Saturday, June 24th. If you have interest in operations please get in contact with Scott for the next meeting.

Construction is moving forward in both the narrow gauge and standard gauge. The scenery installation in the canyon continues. It is very impressive and is involving a number of members. Be sure to come in and see how it is done. We are in the process of installing the turntable at Portola. This will include a scratch built round house. It has been very difficult finding photos of the round house. We finally had to give up and order a copy of the original 1909 blue prints. Thanks go the California State Railroad Museum Library. Repairs will also be done at the Sacramento turntable and garden tracks.

Planning is well underway for some of the buildings we will need. Research is being done on the industries and buildings at Oroville. As a practice we will construct cardboard mockups of all buildings before we start building them. It has become obvious that we need to see the perspective of the buildings in their locations. Two great examples are the mockups of the Oroville and Portola stations Bill Gilbert did. Some other projects before the November open house will be magnet installation at the Sacramento passenger yard, the start of installation of the second ladder in Haggin yard and the reinstallation of the laptop at the programming track.

Efforts on the narrow gauge continue. The order of the 1/8” Homabed has been received so installation of the track can begin. As with the standard gauge, cardboard mockups of the buildings are being placed on the layout. The mockups look great. I particularly like the mill. Track and electrical installation will start shortly.

Needless to say we have a lot going on. If you would like to help see Dave Megeath or Dave Good. Train operation will begin in October. In order to have your equipment ready we will continue to have DCC Friday on the 3rd Friday of every month. If you have any questions or need assistance with getting your equipment ready, feel free to contact me.



Inside This Issue

Got Milk?
EMD's 'Tunnel' Motors
Your Partnership with the Club
Design Requirements for a small Diesel
Engine Servicing Facility

Look for these and other interesting articles inside this issue of The Herald.



Articles Under Development

DCC Tips and Tricks
The Track Designer's Corner
Items of Interest

This is a current list of articles being prepared for the Sierra Central Herald. If you have an idea for an article, please feel free to pull me aside and ask for help!

Got Milk? *by Karl Griffin*

The railroads and the milk industry had a long and mutually profitable partnership for about 100 years dating from about 1850-1950. Afterwards the trucking industry took over. Before this point America was almost entirely an agrarian society consisting mostly of farmers and ranchers with numerous small towns that supported them with necessary supplies. Farmers were for the most part self sufficient as far as food went with small surpluses loaded onto wagons and sold in town. As the size of these farming towns began to grow there was an increased demand for milk. Milk is one of nature's most beneficial foods and is often the first remedy of choice for malnourished children. However there were some health problems in the early days. Whole milk fresh from cows (8% fat) is actually pretty



sterile because of the cow's immune system. However, once it leaves the cow and is exposed to air, bacteria will rapidly multiply enough to spoil it in a matter of hours in summer heat. Refrigeration which slows this natural process was not readily available in homes and lactose intolerance was not a known medical problem.

Gail Borden noted on a transatlantic voyage in 1852 that the cows onboard ship were too seasick to milk causing many infants to die. He came up with the idea of canning the milk before transporting it long distances.



Cooking the milk (pasteurization) sterilizes it and canning it greatly extends its shelf life at room

temperatures. He further discovered that if you cook the milk in a partial vacuum, the point at which it will boil decreases which reduces the amount of energy used and prevents curdling. Furthermore if you boil off 60% of the water (fresh milk is roughly 85% water) one would reduce the weight in shipment by an equal amount (condensed). You also concentrate the protein and calcium content. And you could also remove quite a bit of the fat first which is used to make butter and cream. If you then added pure sugar cane to the mix before canning, the bacterial growth could be inhibited for years. The process of homogenization (breaking up the fat globules so finely that they remain in suspension) was the last refinement. And so Borden was granted a patent for sweetened condensed milk in 1856. This product was



ordered in large quantity by the Union Army during the course of the Civil War for field rations. Vast quantities of this product have been shipped to our troops ever since including the Korean war. By the late 1860's milk processing was a major industry. This product is credited with greatly reducing infant mortality in the late 1800's.

With all the talk these days of irradiating foods to eliminate microorganisms that cause foodborne illness, you might think it is a relatively new procedure. Not at all. In 1934, the Pet Milk Co. introduced the first



evaporated milk products to be fortified with vitamin D (to prevent rickets) via irradiation processing. Evaporated Milk became indispensable in many kitchens and during our nation's wars because of its versatility, convenience, exceptional nutrition and it's creamy taste. It is easy to keep on hand as it doesn't require refrigeration until the can is opened.

Got Milk? *continued by Karl Griffin*

A dairy farm is a farm where the primary product produced is whole milk. The industry where this milk is processed is properly called a creamery. Creameries were located about seven miles apart from each other. This gave dairy farmers convenient drop-off points for their product and enabled the creamery operators to return skim milk quickly. In this sense, the location of the dairies within an easy farm-to-market drive reflects the location of early towns, often established within an easy day's horse drive. It also reflects the common distance between railroad stations. A 'Milk Train' for those of you interested in trivia is a train that stops at every single station and freight platform along the line picking up and setting out less than carload freight. That is why a 5 man train crew was necessary (along with the station agent and his helpers) in the early days as a lot of this freight would just be moving between adjacent towns. And of course you can easily model and operate this way with no problems!

For many years, dairy farmers set out milk cans all along the railroad right of way early in the morning for the milk train to pick up. These slow milk trains would crawl along the line in the wee hours of the night as it did it's



work, eventually winding up at the local creamery or to meet up with a perishable time freight that would carry the fresh milk to a creamery farther away. If you model the period before the 1950's, this is a great industry to include. All that's needed to represent it are a few small covered platforms along the line, maybe a siding near a large farm (some larger dairy farms actually filled entire milk cars with glass-lined tanks daily), and perhaps a creamery near your local population center. Even in later periods, remnants of this industry along the line make nice scenic elements. Note that the milk and mail trains were often combined on many routes, since both were slow trains that operated through the night. An old coach usually brought up the rear, used by railroad crews and postal employees deadheading back to their home cities (a mixed train daily or twice a day).

1940's- The idea of carrying milk in containerized tanks that could be easily transferred between a flat car and a truck was the brainchild of Benjamin Fitch, president of Motor Terminals, Inc. of Cleveland, Ohio. It was a revolutionary idea that led to the intermodal concept of transportation. National Car Company, a subsidiary of Fruit Growers Express Company, joined in partnership

with Motor Terminals in 1940. Borden's was a faithful customer of National Car for many years. Others included Hohneker's, Renkins, Dairymen's League, Sealtest and Sheffield Farms.

At about the same time Thermo King mechanically cooled milk cars were placed in service. These represented a reconstruction of milk cars formerly used in which ice was used for cooling purposes. A wood-enclosed compartment was built at one end of each car to house the compressor and cooling unit, an overhead metal duct was attached to the ceiling lengthwise



through the middle of the car, and hangers were slung beneath the cars to carry a gasoline storage tank and storage batteries. The cooling units, known as Thermo-King freon gas units, were installed in the cars. Similar to units installed in many overland highway trucks the units consist of a gasoline motor which operates a compressor with freon gas, a blower forcing cool air through the duct above the milk at a rate of 2,600 cubic feet a minute, and drawing air back beneath the load. The units operate entirely automatically at whatever temperature is set on the controls, and defrost themselves automatically. A sliding door on the side of the car covers the compartment housing the cooling unit. This permits ready access to the unit when inspecting or servicing.



And there you have it- Milk-one of nature's finest foods and a great industry to model on your railroad layout either in part or in its complete distribution system from dairy farm to creamery or cross country shipments.



EMD's 'Tunnel Motor' by Karl Griffin

For the most part locomotives are purpose built. For example yard switcher, road freight and passenger locomotives have specific requirements to perform their duties in an efficient manner. And then there are a few specialty categories where in railroad companies have unique needs that require unusual specifications for their locomotives. Logging, light weight rail or bridges that have low axle weight ratings demand locomotives that are out of the ordinary. Shay, Heisler and Climax locomotives were designed specifically for the logging railroad's needs. Likewise, the SD (special duty series) from EMD were constructed for those railroads that needed a large road switching locomotive that was easy on lightweight trackage and bridges.

The Southern Pacific and the Denver, Rio Grande and Western railroads also had a unique problem that other railroads didn't have. Very long tunnels and fully enclosed snow sheds were in use to traverse the Rocky and Sierra Nevada mountains. In the days of steam, the cab-forward designed locomotive was a necessity for the engine crew's survival. Very hot exhaust gases and steam could not be properly ventilated out of these tunnels fast enough and as a result railroad management placed a special order with the Baldwin Locomotive Works to construct a class of unique locomotives to solve this problem-the cab forward mallet.

With the advent of the diesel locomotive, the engine crews were again placed in the front of the locomotive but now the problem was that the locomotive would overheat and automatically shut itself down to prevent catastrophic engine damage. If multiple units shut down, the train would then stall in the tunnel due to lack of sufficient tractive effort. Not Good!

Now let's have a look at one of the most unique models that EMD ever produced. The Tunnel Motor. The SP and the D&RGW were the only two Class 1 railroads that purchased these units new; however because of mergers and trade-in's, these models can still be seen all over America on regionals, shortlines, and in lease service. At least one of these locomotives is still in service. The first thing you'll notice about these units is that they are BIG! They are basically an SD40-2 or an

SD45-2 on a stretched out frame. The reason for the stretched out frame, was due to the redesign of the air intake system. So, why the special name and what makes a 'tunnel motor' a 'tunnel motor'? These locomotives were designed to operate efficiently inside tunnels or snowsheds, which gives us the first part 'tunnel'. Motor is a holdover from steam days. Electric trams and trolleys were powered by electric motors, driven by a Motorman, hence the vehicles were called 'motors' by the Motormen. Some engineers carried this over to the then new diesel locomotives, and were in fact quite correct. Electric traction motors are what actually move the diesel locomotive, the diesel engine, simply drives an electric generator or alternator, to supply electric current to the traction motors. A diesel locomotive, should properly be called a diesel-electric locomotive...

And 'motor' sounds and reads a whole lot better than 'tunnel diesel'.

Standard SD-45



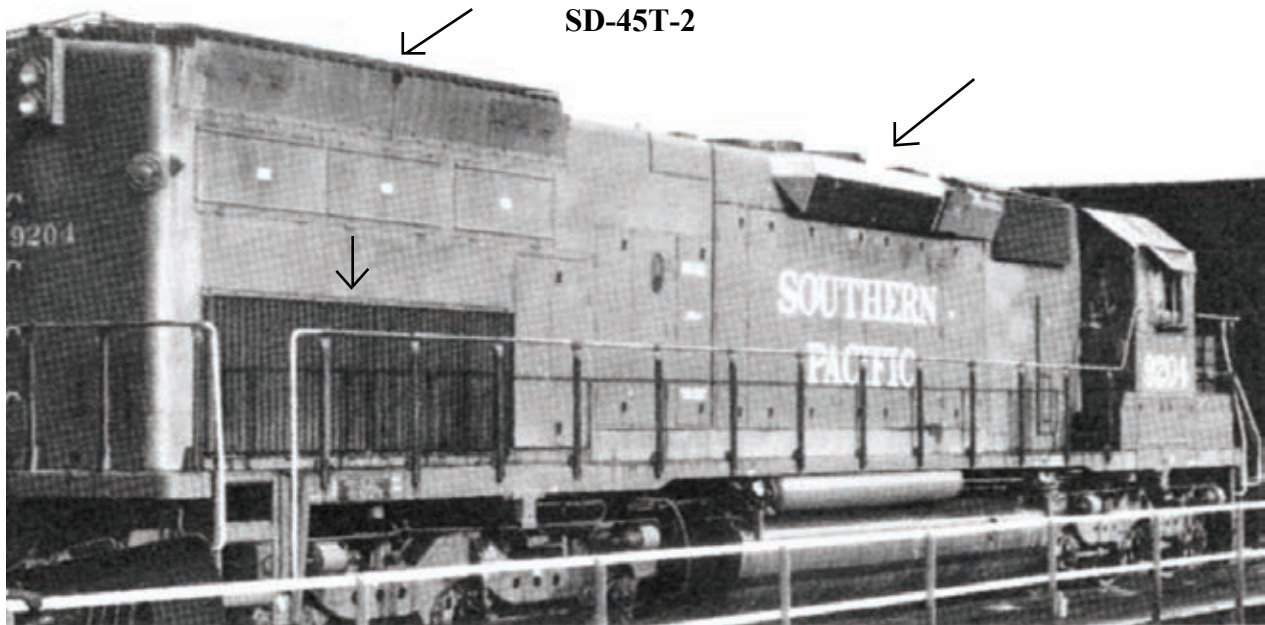
With the introduction of high horsepower locomotives, SP began to have serious trouble with the combination of long tunnels, snowsheds and low speeds

where the trailing engines in a multiple unit consist experienced high engine temperature shutdowns. As units dropped off-line, the train speed dropped, which increased time spent inside the tunnel, causing other units to overheat and also shutdown. The SD45's, like most other locomotives of their time, drew in their combustion air and exhaust their combustion gases at the top of the locomotive. Inside a tunnel the hot exhaust gases have nowhere to dissipate quickly. So they collect near the top of the tunnel roof and the trailing locomotives radiator fans would draw these hot gases in allowing for very little heat exchange to take place, so very hot cooling water is returned to the engine, which only makes it hotter, until it exceeds the temperature limits and the engine management system shuts the engine down, to stop any critical damage from occurring. As units shutdown a number of major problems occur. Any shutdown units add their dead-weight to the train, instead of contributing pulling power. The traction motors in the running locomotives, having more work to do, can start to overheat. If they exceed their short-time rating, they can burnout, unless the engine overheats first. If enough locomotives shutdown, the

EMD's 'Tunnel Motors' *continued by Karl Griffin*

train can have less than the required horsepower to actually move the train, and so stall, possibly inside the tunnel. Crews would experience breathing difficulties due to the build up of exhaust fumes. So EMD constructed large metal shrouds (elephant ears) which were fitted over the radiators which drew cooler cleaner air from the walkway closer to the bottom of the tunnel. EMD then developed the 'tunnel

separate orders over a 6 year period #5341 - 5413. The major difference between D&RGW and SP SD40T-2's is the DRGW units have shorter fuel tanks.



motor' radiator. This was first applied to the 1972 delivered SD45T-2's to the SP. The 'T' stood for the application of the 'cooling system modification' or 'tunnel radiator' to a standard SD45-2. In total, Southern Pacific received 248 of these specialty built locomotives. They are easy to spot, with the body taking up the entire length of the chassis due to the 20 cylinder engine. The SD45T-2 was built on the same chassis as the SD45X. They have three access doors over the rear cooling air intake which allow access to the electric motors that drive the radiator fans. Beginning in 1986, 126 SD45T-2's went through SP's Sacramento Shops for a complete rebuild, now designated SD45T-2R's. With the fuel crisis of the mid 1970's, and the propensity of the 20 cylinder EMD engine to break crankshafts, as well as guzzle fuel; the railroads opted for the 16 cylinder, and more fuel efficient SD40-2 prime mover. In 1974, SP started taking delivery of SD40-2's with the same rear tunnel radiator as the SD45T-2's - designated as SD40T-2's. The SD40T-2 has two radiator fans and therefor has two fan access doors.

The only other railroad to buy 'tunnel motors', was the D&RGW. They received a total of 73 units in 5



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Your Partnership With the Club by Karl Griffin

About once every five years or so I like to say a few words to the entire membership as a gentle reminder as to what this club is all about. When you joined the Sacramento Model Railroad Historical Society, Inc. you were required to fill out a membership application form on which you were asked if you had any special talents or abilities that you could bring to your fellow modelers as well as your level of modeling experience. I mention this because there are many, many needed specialties in our organization. We need people to lead and organize, plan and coordinate and we need people with construction experience as well as painters, artists, electricians and electronic technicians. We need writers, track layers and bridge and structures builders as well as grounds maintenance and



housekeeping.

My point in all this is that in this list of needed skills, there is something for everyone to do. You can be totally ignorant in electronics but have a skill that this club can definitely use. All it takes is a little initiative on your part to let the membership know what area you'd like to contribute to and the job is there for the taking! What you don't know you can learn because somebody in this club knows how to do it. And of course that works both ways-you have a skill or talent that a fellow member doesn't have but would like to learn and you owe it to him or her to help them learn for the good of the club as a whole.

Someone might think that age or disability keeps them from contributing their fair share. Not so-for most of us age brings wisdom and experience and hopefully some leadership skills. Another benefit of age is contacts as in networking to assist in problem solving. If there is a difficult job to be done, the ability to find an outside expert to help can be invaluable.

One final thought on giving-this club has been in existence for 58 years, and you can expect it to be here

long after you leave. Seriously consider leaving a gift to your club when you pass on-either material or financial. You joined this club because you wanted to be part of a project that you couldn't accomplish by yourself, this is your final opportunity to keep the joy of model railroading going in your absence...

So, just what do you get for your monthly dues and your time and effort? You get to be a part of the **only** permanent fixed site model railroad club in all of Sacramento County. Our facility with its two complete layouts is far and away much larger and more sophisticated than any **one** of us could possibly hope to own and operate in one of our homes! The cost to duplicate this facility is well beyond the means of any one of us individually as well as an impossibility for one person to operate or maintain properly!

You get to be a part of a **team** that has constructed

and is in the continuous process of modifying and improving two layouts that only a group of similarly enthusiastic individuals with a wealth of diversity of talents could build. You **must** be a team player whose goal is to **share** your talents and work for the betterment of all.

You get to socialize with a truly wonderful group of people from a wide variety of occupations who share your love of a common interest-model railroading. I want to emphasize this, because it is a major advantage over the 'lone wolf' approach. Only here can you build and operate on a scale that is impossible for a single builder and operator to duplicate. And of course the opportunity is here for you to make some really great lifetime friends!

You get to learn about many railroads other than your personal favorite because we come from all parts of this great country and have all had different experiences in our lifetimes. And you have already learned just how multifaceted this hobby of ours is. Getting help from a fellow member is just an easy question away to solving a construction or operating problem.

Design Requirements for a Small Diesel Engine Terminal Facility

by Karl Griffin



Every model railroad layout needs an engine facility to service its locomotives. While a large layout can devote a relatively large amount of space(s) to this necessary feature, this article will discuss the minimum requirements for a very small branchline diesel operation. In an area of about 2 square feet of real estate you can construct a complete facility! This would be ideal for a shelf type point to point layout with this function at one end or as part of a branchline operation in a larger layout. With some imaginative planning, you can also use this beginning to your railroad or branch to also perform or represent several other functions. Since layout space and funding are the two main limiting factors on most layouts, you need to try to get as much operation as possible into as little operating area as possible. Let's examine some possibilities.

The most basic structures of a diesel locomotive facility include a one stall engine house, sand house, sand tower, fuel / water / grease / lube oil pumps and dispensing devices, brake shoe and air hose replacement bins, an office and a power/telephone pole.

The one stall engine house is the largest structure. One of the advantages of diesels is that they really don't require a turntable or 'Y' turning track. Running a pair of small switcher locomotives MU'd back to back eliminates the need altogether. A modern engine house would be constructed of steel I-beams on a concrete pad and sheathed and roofed in steel siding. An older facility would be constructed of brick. It would be two stalls wide with one entrance and the rest as a work area with an inspection pit under the entrance area. If you had always wanted to superdetail a building this would be a good choice to start with. Install an air compressor, welding and power washing equipment. Assorted hand tools and boxes for spare parts round out the details. Dead end a track in front of the second stall or the side of this building to locate an overhead crane, store a snowplow or wrecker crane which could also be used

to perform major repairs such as lifting off the hoods or changing out the prime mover or alternator unit.

The sand house and sanding tower must be located next to or opposite each other. All sorts of fine detail can and should be attached to the tower. An air compressor inside the sand house blows the dried sand up to the top of the tower. The diesel oil/lube oil/water dispensers can be simply represented or provide another opportunity for superdetail. The diesel fuel can come from several above or below ground storage tanks or even from a spotted tank car leading to a pump shed. All of these components should be mounted on a concrete pad and the brake shoe / air hose replacements bins can also be located here.

The office building would be a small generic building with a vehicle parked in front and a power pole with transformer and phone box next to it to power the entire facility. If a separate office building takes up too much space, make the engine house a two story building!

One of the keys to making the facility look right is to go out and take pictures of actual small facilities. If that isn't possible because the area you're trying to model is too far away, jump onto the internet or go through back issues of your favorite railroad magazines or checkout the book collection in our club library for pictures.

And there it is-a fully self contained engine facility that contains everything needed to service your branchline diesel operation in an absolute minimum of space which can be configured many different ways so that everything fits. It can also be a part of a small interchange yard which is common at the end of a branch line and while it should be fairly dirty, it should never be messy. Add a little bit of chain link fencing, a bit of landscaping and you have a complete and tidy operation.



Editors' Comments by Karl Griffin

It is with some regret that this will probably be the last issue of this newsletter that comes to you in the mail or can be picked up at the clubhouse in paper form. The price of ink and postage is really getting prohibitive as our membership continues to increase. Since almost all of us have access to a computer I'll send the pages to Dave Megeath and he'll post them into our website. For those few members who don't have internet service I'll mail you a few issues at the clubhouse for our guests. Please note that this change will in no way change the quality of this newsletter. You'll continue to get my best effort at informing all of you of current events, history and 'how to' articles. This issue of the Sierra Central Herald completes my 10th year as your editor, author and publisher. I hope you have gotten as



**Articles for inclusion in the
Sept / October issue are due
NLT**

Sacramento Model Railroad Historical Society, Inc.
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The **Sacramento Model Railroad Historical Society, Inc.** is located at 1990 Grand Ave., Sacramento, CA 95838 and is open every Tuesday and Friday night at 7:30 p.m. It is the home of the **Sierra Central Railroad** which is modeled in both HO Standard and Narrow Gauge. Telephone (916) 927-3618 for info and directions. Visitors are always welcome!

Our Internet Club Website: www.smrhs.com

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	Dave Good	2 yrs
	Don Butler	1 yr

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**Next General Meeting is the last Friday of
July, 2006**

