SIERRA CENTRAL HERALD

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

Our 58th Year **September / October 2006**

Inside This Issue

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
The Bobber Caboose

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!

"Under The Hard Hat" *by President Bob Rohwer*

Progress at the SMRHS continues on many fronts. We certainly are multitasking. All you have to do is look around. The scenery work continues in the Feather River canyon and looks fantastic. The scenery inside the tunnels looks particularly interesting. Yes, I did say inside the tunnels. Be sure those double stacks are scale width. The turntable and garden tracks are almost completed at Portola. It is possible that we will have two turntables operating during the November open house.

The installation of the of the Chubb systems continues. Don is installing the parts and software that will allow the Chubb system to control switches. This will be a requirement for CTC. After fighting the capacitor inrush problem and multi-engine trains causing rolling shorts in the PM42's we have developed a fix for the problem. The Society just purchased four ten amp boosters to upgrade the DCC power by 100%. We are also installing #1156 light bulbs around the PM42's. Thanks to Joe Melhorn for the donation. The light bulbs will charge the capacitors while the PM42 recovers from a short. We have tested the solution and it works well.

The narrow gauge continues with construction. They have been installing the homabed. They are using the thinner 1/8 material. Take a look, it works very well.

Contained in this newsletter are three documents I sent out by e-mail earlier this month. Please reread them since they deal with activities that are planned for the rest of the year; getting ready for open house, detection requirements, the startup of train running on September 15th, and an operations demonstration. All of us will need to focus on getting trains certified, installing resistor axles, providing your open house submittals, collecting items to sell at Railfaire, and providing cars for the 160 core car collection. A signup sheet has been posted for the bulk purchase of radios with a choice between two headsets. The cost should be less than $30 for a headset and radio. If you already have a radio with a headset jack you can buy just the headset.

Realistic Operations - September 22nd Session *by Scott Inman*

Anyone interested in participating in prototypical railroad operations on the SMRHS standard gauge layout is encouraged to attend Friday evening, September 22, from 7:30 to 10:30pm. The construction committee has given assurances that the layout will be functional for those of us with a need to run trains with a purpose!

Format: For this session, the simple fundamentals of freight car switching will be emphasized. This includes building a 10 car train in the freight yard, observing simple train orders from the dispatcher, running over the mainline to a specific location, switching out (spot and pull) the cars in the train, and returning to the freight yard. There will also be run-through freights.

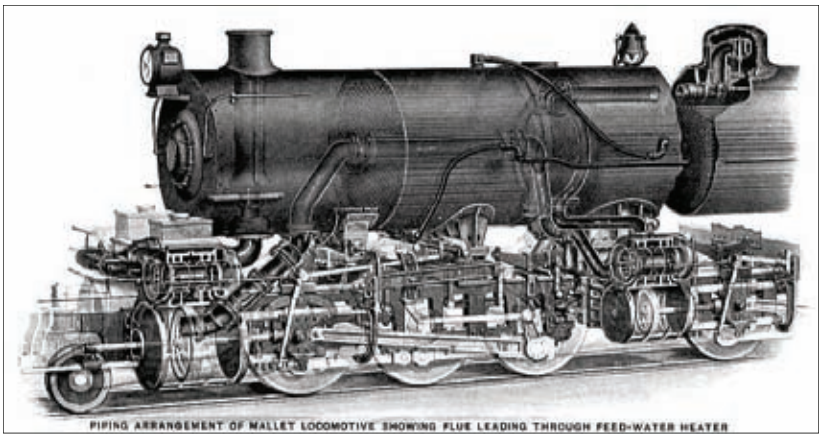
Goal: Develop operator skills for basic freight car switching, yard operation, and train instruction use. These skills will add to those for train order use and dispatcher control. Use of layout uncoupling magnets, turnouts, control panels, and place locations will be reinforced.

What to Bring: For this session, please bring a locomotive (or set), a matching caboose, and a throttle. Club cars and cars belonging to the operating committee may be used until a fleet of core cars is further developed. Please remember:

1) Your locomotive may be operated by someone else,
2) Your throttle may be used by someone else, and
3) You may need to wait for an operating slot.

The Articulated Steam Locomotive *by Karl Griffin*

Necessity is the mother of invention and increased productivity is the father. In the early part of the 20th century our railroads in their never ending quest for more powerful steam locomotives demanded that their engineering departments come up with engines that provided more tractive force with axle loadings that didn't exceed specified limits and were more efficient in per ton mile costs. The term 'Ton Mile Cost' is the bottom line measurement of productivity. What is the total cost to the railroad including cost of materials-coal, water, sand, maintenance, initial capital investment and labor (manpower) to move one ton of freight one mile? There are a large number of variables that design engineers have to work with which necessarily mean that every locomotive is at best a compromise creation. As freight traffic continued to increase, railroads increased the number of cars per train. Longer trains were a much cheaper solution rather than double tracking. Larger more powerful locomotives are cheaper both in running costs per ton mile as well as being more economical in maintenance costs per unit of drawbar pull. Labor costs for the train crews could also be held to a minimum. Instead of always double-heading and using pushers up mountain grades up mountain grades, a single large locomotive could sometimes do the same job in many cases!



PIPING ARRANGEMENT OF MALLET LOCOMOTIVE SHOWING FLUE LEADING THROUGH FEED-WATER HEATER

Logic dictates that if you want more tractive effort either pulling (heading) or pushing (helper) a train then more weight must be applied to the driver wheels but you can't exceed the limits that your rails and bridges can support. If 100% of your locomotive's weight is on the drivers (steam or diesel) you have reached maximum tractive effort efficiency. This was in fact accomplished with logging and mining steam locomotive with the invention of the Shay, Heisler and Climax engines. So why didn't they just build a larger version of these locomotives? These were 'geared' as opposed to 'rod' driven engines and so their practical best operating speed was about 15mph. Mainline railroads needed something faster (less labor costs) and more cost efficient (cost of coal per ton mile). If you scaled up these engines you would also run into the problem of exceeding the axle loading ratings for your rails-most geared locomotives had 4 axles. So, back to the drawing board.

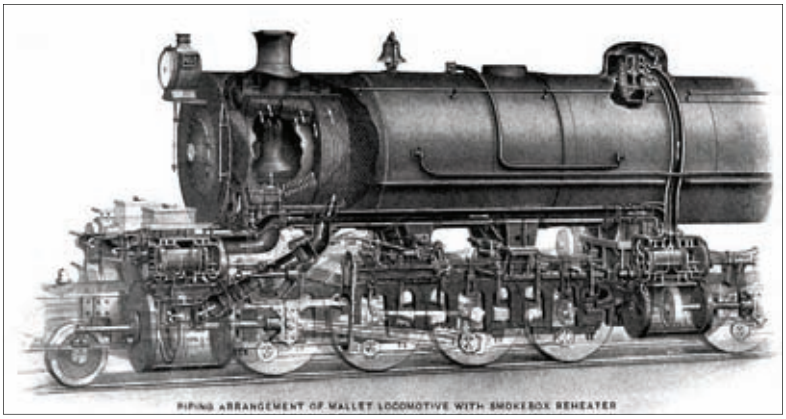
More drivers spread out the weight of a locomotive which reduces the axle loading. It also increases the wheelbase. An 0-10-0 wheel arrangement (tank engine) with blind center flanged wheels is an excellent yard switcher engine with maximum tractive force. But you run into the problem of the requirement of not exceeding a certain wheelbase length so that you can negotiate curved track and the problem that in going faster you need a 'pony truck' and a 'trailing truck' to guide the locomotive into curves at speed which means something less than 100% of the weight of the engine will be on the drivers. In addition, if the coal and water are carried on the locomotive rather than in a separate tender your range will be limited before needing to refuel again. While this is not a problem in the switchyard it is not a practical option out on the open mainline.

So, we need more drivers to keep the axle loads within limits, we need a rod engine with pony and trailing trucks to guide the engine at speed, a tender to carry enough coal and water for long range (normal range between division points was 100 miles) and we can't exceed a certain rigid wheelbase length. The solution was the Mallet-most commonly in 2-6-6-2 or 4-8-8-4 wheel arrangements. Two sets of rod coupled driver engine assemblies, one rigidly connected to the boiler (rear assembly) and one that was free to pivot under the front of the boiler. There was no mechanical connection between the two so it was possible to have one driver assembly slipping while the other was providing traction. Both driver assemblies could be steam powered by the same boiler or one could be a high pressure driver and the other a low pressure driver driven by the steam exhaust of the high pressure driver.

As you might imagine there were all sorts of problems that needed to be addressed to make these giants work well and to realize the productivity gains that management wanted. The front engine assembly now

being articulated (allowed to pivot) meant that you had high pressure steam pipe joints (slip, ball and expansion) that also had to pivot. Secondly, you had the problem of having to reheat the exhausted steam from the high pressure cylinder assembly. This requirement occurs because when a gas, in this case steam, is highly compressed it rapidly increases in temperature and likewise when the gas pressure is lowered as when it expands in the high pressure rear steam cylinder to move the piston which moves the locomotive, its temperature drops. In this case it drops to about 250 degrees. It is imperative that the steam not be allowed to go below the boiling point and recondense back into water. Therefore the now low pressure exhausted steam from the rear cylinders is fed back into the locomotive's boiler and reheated in a separate superheater before being sent to the forward steam cylinders.

Approximately 15 different major configurations of articulated locomotives were constructed to get around patent problems and because each major railroad engineering department thought they had a better idea.



PIPING ARRANGEMENT OF MALLET LOCOMOTIVE WITH SMOKEBOX REHEATER

In 1874 the very well known French locomotive design engineer Anatole Mallet applied for an initial patent which described a revolutionary semi-articulated steam locomotive design. The French patent office formally awarded him a complete Patent No. 162,876 on June 12th, 1885. The Mallet-type locomotive is distinguished from all other articulateds by its ingenious mechanical construction. The boiler is supported by two chassis (engines) with the firebox ridiidly attached to the rear one. The forward engine is connected with a vertical/horizontal hinge (later with a ball and socket) which transmits its power to and supports the forward engine to enter a curve and gradually guide the rigid rear engine into and follow the curve. This hinge is the main point of Mallet's design. It permitted even weight distribution on rough track. For maximum efficiency, the steam cylinders were placed in front of each engine allowing High Pressure steam to come directly from the steam dome down to the rear chassis engine, partially expand and go to the front cylinders by way of a large pipe called a receiver and then expand again. This sequence is called 'compound expansion' which makes use of the steam twice. This results in superior thermal efficiency and provides an 'elastic' coupling between the two engines. If the high pressure rear engine begins to slip, excess steam accumulates in the receiver pipe causing a back pressure against the high pressure cylinder automatically reducing its power and increasing the pressure to the forward engine. The same action occurs if the forward engine should start to slip. When initially starting a heavy train a separate valve is available to the engineer to inject high pressure steam directly into the forward engine to maximize starting traction. Very large piping was used to reduce pressure losses and all piping on the forward low pressure engine had rotary and slip joints to provide for lateral movement as well as for thermal expansion and contraction of the piping itself.

The first American Mallet was constructed for the Baltimore and Ohio railroad in 1904, seventeen years after the first Mallet had been constructed in Europe. It was an 0 - 6 - 6 - 0 configuration and was used as a pusher engine to replace two smaller unarticulated pushers. During the next 50 years this basic design produced larger and larger locomotives culminating in the production of the largest steam locomotives ever built. Almost every single Mallet ever produced in the USA was constructed by Alco or Baldwin. By 1908, 136 of these giant locomotives had been built. If the invention of the superheater hadn't occurred in 1910, it is entirely possible that compounded expansion would have died because of thermodynamic inefficiencies. Almost 25% of the thermal power was lost between the rear engine and the smokestack. The last 2-8-8-2 compound expansion locomotives were built by the Norfolk and Western railroad in 1952. Interestingly, these locomotives produced 6,800 horsepower, the same as a four unit diesel locomotive set at that time that cost 4 times as much! If the diesel electric locomotive hadn't arrived on the scene when it did, a whole new generation of vastly improved Mallets developed by N&W were about to be introduced-too bad...they were to have had Timken roller bearings and many other major improvements. A total of 2,731 Mallets were constructed over a period of 50 years.

Passenger Train Operations-Different Approaches *by Karl Griffin*

If you have visited a lot of fellow railroad modeler layouts you've probably noticed that the primary emphasis of the layout has been on freight operations just like today's prototype. What we often forget though is that we are thinking and seeing in the present time frame. For most of us the majority of our lifetime has been in a time where Amtrack has been our only experience with passenger trains and yet most of us model a time frame well before this; the 40's and 50's with the transistion from steam to diesel electric powered trains. This is neither good or bad from a modeling standpoint but it does color our perceptions a bit on how we approach this subject.

If you ask the typical modeler about passenger train operations he or she will often shrug his shoulders and point out his full length named train (depending on the size of his layout) and a depot or two. He doesn't really get excited about it. And that is a shame because there is a lot of wasted potential here. With a little research you'll soon discover that there are many really interesting opportunities here for your railroad operating pleasure. Consider the following: you can have just as many switching possibilities with passenger train consist changes as with freight trains! You can run short passenger trains with smaller motive power for smaller layouts. Another possibility is to run a 'mixed' train, a freight train with a coach or combine car tacked onto the end of the train. Its primary purpose was for employees who were deadheading back to their home station. Another option that railroads used was an extented caboose-large enough to hold 10-20 people including the two brakemen and the conductor. Just a reminder-you don't see this nowadays but this was very common 60 years ago. You can use a turntable to turn around an observation car or a wye track to turn an entire passenger train around. On certain scenic routes sleeper cars were always oriented so that the passengers had the best view on one side of the route that they were traversing.

Most passenger trains of long ago had 'head end' cars that produced more revenue for the railroads than the movement of passengers. These cars carried mail, packages, baggage, horse cars, milk cars, etc. The point being that the variety of cars found on a passenger train was much larger than what we see today. There was a time when most people went to and from major sporting events or popular vacation resorts by special passenger trains rather than in individual automobiles!

Another interesting possibility is a tourist train for your layout. This can be of any length with many different consists. It can stop off at a scenic siding while a freight train goes by or at a station siding where your passengers have lunch. Place it at a vista point and you have a great reason for this lunch stop. This is done on the Grand Canyon Railroad. Occasionally these trains will switchout a revenue freight car enroute-tourists enjoy seeing this operation. Use your imagination here because I'm sure that some prototype railroad somewhere used to do this. A few still do.

In the days of steam and no air-conditioning, passenger cars were fitted with fine windows screening to keep out cinders. Even so most railroads had a few headend cars of any type to increase the distance for the passengers from the locomotive, this was also done for safety reasons.

Try these combinations-1. A combine and two coaches.
2. A baggage car and three coaches.
3. A baggage car, 2 coaches, observation car (classy).
4. Three coaches, a parlor car, observation car.
5. Freight cars, coach car, bobber caboose!
6. Freight cars, open (but with covered top) coach cars plus enclosed coaches. Very common in tourist trains. The Santa Cruz Railroad does this everyday.
7. Five coaches-common commuter train setup.
8. RPO, baggage, coaches, observation car.
9. Baggage, coaches, parlor and sleepers. (overnighter)
10. Baggage, auto on flats, coaches. (auto train).

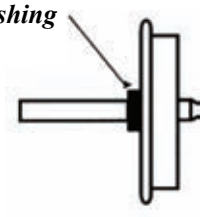
Passenger trains are normally assembled in coach yards. A switcher engine would create the train in a specified order and bring it up or back it into a ready track or into a train shed where the road locomotive would then take over. An alternative to this would be for a road locomotive to do both jobs. A road switcher is perfect for this. Some modelers like to have one really good running locomotive do all their operations both freight and passenger because they are representing a small shoestring branchline operation. This is probably more realistic than most people think as it reduces the need for large engine storage, service and repair facilities on a layout that you may not have space for.

Do yourself a big favor and really think about the world of possibilities that imaginative passenger operations could do for your model railroad layout!

Making a Resistor Wheel Set
by Bob Rohwer

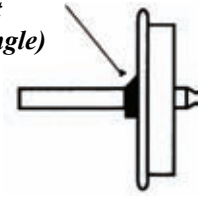
1. Locate the insulated bushing on the wheel set. This example is an Intermountain wheel set. Plastic axle wheel sets like the Proto 2000 will require a different process.

Insulated Bushing



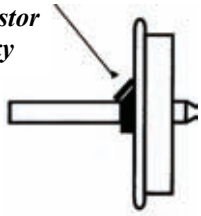
2. File a flat spot at an angle on the insulated bushing. Be sure you file enough to be level with the metal on the axle and wheel. The side of a small flat file works well. For JB wheel sets use a cut off wheel on a Dremel motor tool.

File Flat (Note Angle)



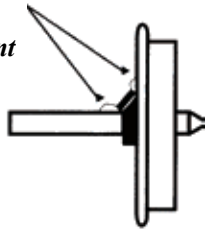
3. Glue a 1/10W or 1/16W 10K ohm SMD chip resister using 5 minute epoxy on the angled flat spot on the wheel set. Use pointed tweezers to hold the resistor and touch it to the epoxy to put a thin coat of epoxy only on the bottom of the resistor. Glue the resister as shown.

Glue Resistor with Epoxy



4. Once the glue is dry, carefully file a small area at each end of the resistor until the brass shows through to form an area that is conductive. Put a small dab of conductive paint covering each end of the resistor and the conductive area. Be very careful not to let the paint bridge the insulated area on the wheel set and resistor. After the paint dries, test the wheel set with a volt/ohm meter. It should read about 10K ohms.

Paint Resistor ends with Conductive Paint



Open House 2006
by Rick Hansen

Now that the club is shutting down construction on September 15th and turning the layout over for operations, it is a good time to start thinking about the November 2006 Open House and what has to be done. This year's Open House falls on the weekend of November 18th and 19th and will be here before we know it. So, here is what I plan for as far as having trains submitted and what certification requirements these trains must go through before running on Open House weekend.

Submittals: I will have the Train Submittal Forms available at the club by the end of August. The sooner they are filled out and returned to me the better, because that means we can start the certification process sooner. No Train Submittal Forms will be accepted after November 4, 2006**. THIS IS FINAL,** so get those trains submitted.

Certification: If the submitted train ran during the May 2006 Open House, it needs only operation certification, which is one trip around the layout without a problem. Any new cars or locomotives added to the consist must also be bench certified, i.e.; coupler height, gauge, etc. . Any submitted trains that are new for this Open House must be both bench and operation certified.

To help accomplish the certification process, I have set the following dates aside where I will be available to operation certify your trains:

Tuesday evenings: October 3rd, 10th, 17th, 24th and November 7th.

Friday evenings: October 6th, 13th, 20th, 27th, November 3rd and 10th.

Saturday's 9AM to 2PM: October 14th, 28th and November 4th.

Note: Other bench certifiers should be available during regular club nights of Tuesday and Friday. The last night for any kind of certification is November 10th. If a train has not passed by then, it doesn't make the Open House roster.

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Special Message *by Bob Rohwer*

This is a list of activities that will take place over the next several months. The end of the year is a very busy time at the SMRHS.

End of construction and train operating begins on Friday, September 15, 2006. In order to operate trains and be ready for open house the following activities need to be done: We will need about 160 core cars to be on long term loan for the membership. These will be needed for the operations session and for the open house. Cars used on the layout must have detection. Most will require a resistor on one of the axles. All core cars must have detection. It is recommended that all member cars have detection. For open house only every 4th car will need detection. Over time the requirement will be for all cars.

The Society will provide its members, free of charge, the surface mount chip resistors to make the wheel sets. Conductive paint will be available for use at the club house. It can also be purchased at Fry's Electronics for about $15.00. The Society will sell an Intermountain resistor wheel set for $1.00. We will give a $.50 credit if you return an Intermountain wheel set. If you want to build your own resistor wheels sets at the club house we will provide assistance and instruction.

All cars must be certified. If your cars have been certified and have a blue sticker they are considered certified. If you need cars certified, bring them in. All cars loaned as core cars will have to be recertified. We will use yellow dots for core cars and blue dot for member's cars. As an experiment we will start opening at 1:00 p.m. on Fridays beginning September 15, 2006. Hopefully this will improve access to the Society and give us more time.

Our first operations session is on Friday, September 22, 2006. All members are invited to participate in this session. We will actually operate trains with a point of origination to various locations to deliver and switch cars. This will be a lot of fun. Further details will be coming from the operations committee.

Open house is rapidly approaching. It will be on November 18th and 19th. As with previous open houses we will be submitting trains to be used for open house. Start thinking about what you would like to submit.

Railfaire will be on November 11th and 12. We will have two tables. Please go though the items you have had on the shelves for years and consider donating them to the Society for sale at Railfaire. This is one of our major fund raising activities and we need your support. Dave Megeath will be the lead for our Railfaire activities.

Questions or comments? Please feel free to contact me.

Core Cars *by Bob Rohwer*

The Society last collected core cars in 1998 just before we tore down the layout. A core car is a member's car that is loaned on a long term basis to the club as part of a general fleet of cars for members use. They are subject to handling by any member and should be of good quality but not be a fragile car. The Society assumes no risk for core cars.

It's time to assemble the core car fleet for open house and operations. Each member is encouraged to loan up to 10 (max.) cars for the fleet. We will need about 160 cars of any type and era. In the future we will rebuild the core car fleet by era, car type and car number. The cars will be kept at the club house. Special boxes will be used to store the cars when they must be removed for construction or other purposes.

Cars must pass certification, be complete, have a good appearance, have detection and have an identification mark. Certified cars will be marked with a yellow dot. Be sure your mark is on the bottom of each car so we can identify the owner (the club roster lists the unique identification marks of each member). If you do not have an identification mark or it is not recorded, please contact Mike Knoles. We will start collecting cars immediately and hope to have the collection completed by 9/15/06. An inventory of the cars will be maintained.

Questions? Contact me. Certified cars should be given to Tom Darr, Dave Megeath, or Bob Rohwer.

Open House is Coming!
Will you be ready?

Railfaire is Coming!
Turn in your donations!

A Note from the Paymaster

Thanks to all of you for keeping up on your monthly dues as well as making a contribution to our "fill 'er up" donation fund for special projects. We have made great progress in both the narrow gauge and the standard gauge construction projects – all funded by the generous donations we have received. And yes, we have spent down the $$ collected in our fund raiser.

As our fiscal year draws to a close I would like to encourage you to dig out those old $5 freight cars and seriously evaluate them in comparison to today's highly detailed cars. I am as guilty as any of 'hanging on' to stuff I bought years ago – adding Kadee's and metal wheel sets. Now I look at those cars and realize a lot of the old Athearn and similar el-cheapo cars just don't stand up to the new stuff. I would like to convert everything to Kadee 58's (smaller 'semi-scale' couplers) and kick out the old Jay-Bee wheels for Intermountain wheels … but why not just donate the old cars to the SMRHS for our November sale table at Roseville?

Now I have an excuse to re-equip my roster with new rolling stock! So think about it – we would appreciate your donation of those 'el-cheapo' cars to help pump up our special projects funds.

Too hot for you at the SMRHS? Use the time to evaluate your rolling stock in the comfort of your own home!

Dave Megeath

Election 2006 Absentee Ballot

The following members have been nominated for the positions listed next to their names by the Nominating Comittee.

Write-in nominations are to be written on this ballot or a photocopy of same with the position listed by that name. Vote for **one** person per position.

President: Bob Rohwer
Vice Pres: Scott Inman
Treasurer: Don Butler
Secretary: Mike Knoles

Board Member for a **3** year term.

Choose one of the following nominees:

Dave Megeath **or** Joseph Melhorn

All Absentee Ballots must be received prior to the election on the last Friday of September, 2006. Your name must appear at the bottom of this ballot. You must be a regular member in Good Standing (Dues paid up!) to be eligible to vote or to hold office.

Junior/Honorary/Probationary/ and Associate members are **not** eligible to vote.

Voter's Name:

Editors' Comments *by Karl Griffin*

Welcome to the 21st century and the all digital electronics revolution! The command and control systems on our layout as well as this club newsletter are now all digitally produced and electronically transmitted around the world via the Internet. Now you see exactly what I do when I create these articles and best of all the money saved by not having to print this out will now all go into our construction fund. As we continue to explore the possibilities of what can be done to increase productivity and get our costs down feel free to share your discoveries with all of us via this newsletter. Experiment, create and finally document your findings. Don't reinvent the wheel, improve on it! I'm always available via E-Mail to help you with your ideas for articles that everyone can benefit from. Each of us has talents, abilities and knowledge that together can enrich this-The greatest hobby in the world!

Articles for inclusion in the Nov / Dec issue are due NLT the second Friday of October!

Sacramento Model Railroad Historical Society, Inc.
1990 Grand Ave.
Sacramento, CA 95838

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**

Our 2005/2006 Officers:

President	Bob Rohwer	
Vice Pres	Rick Hansen	
Secretary	Mike Knoles	
Treasurer	Dave Megeath	
Board Members	D Launderville	3 yrs
	Dave Good	2 yrs
	Don Butler	1 yr

Newsletter Editor/Publisher/Author
Karl Griffin E-Mail **KGri264641@aol.com**

Next General Meeting is the last Friday of October, 2006