ROSE CITY GARDEN RAILWAY SOCIETY

NEWSLETTER

See our Web page at http://www.rcgrs.com/

May 2006

A Note from the Vice–President Jeff Lange

Dear Members of the RCGRS:

I am writing this message this month to help out our club President, whose father just passed away. I am happy to help any club member out at anytime, and I was happy to fill in for Darrel at this time. Please send him your regards and condolences for the loss of his father. Darrel has been by his dad's side for the last month or so, and was with him right to the very end.

In the meantime, we have had two great open houses just recently, and I was fortunate enough to have been able to attend both. The first one was held at Quinn Mountain, on the afternoon of Sunday, March 26th. Both Christina and Bud put on a marvelous open house and potluck, and have really done some wonderful improvements to their outdoor railroad. See the recent April Newsletter for pictures of their place, and an article on their garden railroad. Thank you both for hosting such a lovely event at the ever beautiful Quinn Mountain Resort!

The second open house/planning session was last Saturday, April 22nd at Jerry and Barbara Clark's home. They hosted a potluck/planning session combination, and several members gathered at their lovely home to 'brainstorm' different ways to lay out a future garden railroad to traverse in front of and beside their lovely water feature that is the centerpiece of their backyard paradise. Many ideas were shared, and lots of walking around and 'figuring out where to put it' went into the afternoon. Jerry meanwhile, was grilling up delicious Polish hotdogs and cheeseburgers while the 'right–of–way' inspector Barbara was telling us what she would like to see someday. The day was perfect, with light east winds, and bright sunshine. After the planning sessions and lunch was over, several members retired to Jerry's 'Movie Room' and watched DVD's of several different tourist railroads on their BIG screen T.V. Thank you Jerry and Barbara for hosting that fun–filled afternoon at your wonderful home in Vancouver!

Our next open house/business meeting is on Saturday, May 13th, at Dennis and Carolyn Rose's home. Please check the newsletter for times and what to bring for lunch.

Member Roster: Some members have not paid their dues for 2006. We still want them to remain members of our club, and to please submit their annual dues to the treasurer, Steve Cogswell, as soon as possible. Only those who have paid their current dues will have access to the member's area of the Website and will continue receiving the Newsletter.

Diesel Engines of 1930

The Electro–Motive Corporation (EMC) was created by Harold Hamilton in 1924. The company was little more than a letterhead and a rented office. By 1930, the EMC offices were located at the Winton Engine Company facilities. Winton and EMC had developed a symbiotic relationship. The St. Louis Car Company built most of the early car bodies for the motor cars, but EMC slowly shifted to the Pullman Company as the preferred supplier.

Branch line service was the first area to suffer from the emerging transportation modes, especially the development of "all–weather" roads for the automobile. The railroads were locked into continuing the unprofitable service. Once a railroad guaranteed service by acquiring a right of way, it was a small concession for the railroad to be the sole means of access for freight, mail, and passengers. As demand waned and costs increased, this concession grew into a large liability.

The motor cars manufactured by EMC, Brill, Budd, and GE indicated to the railroads that there might be solutions to the high cost of steam for serving branch lines that no longer generated enough traffic to pay for itself, much less turn a profit. (Except for the later EMC motor cars, most

of the motor cars had either gasoline or distillate motors.) Could a light weight train be developed that would have more capability than a motor car, but be economical enough to reduce costs on branch line service?

In 1929, General Motors decided that there was going to be a large market for diesel powered locomotives in the near future. The easiest way for a company to enter a new market is to purchase another company that has the expertise, engineering and manufacturing facilities for that market. GM had the deep pockets needed to purchase the Winton Engine Company and EMC in 1930. More than 400 motor cars had been "built" by EMC by the time its completion of purchase in 1932. GM changed EMC into an integrated diesel locomotive builder and changed the name to the Electro–Motive Division. GM started development of a more powerful and efficient two–cycle diesel engine, but this engine development takes some time.

(Note: Remember the close association between diesel powered locomotives and diesel powered submarines? GM/Winton used this same diesel technology and also created the Cleveland Diesel Division to serve the U.S. navy. One of the first diesels delivered to the navy by the Cleveland Diesel Division was the Winton 201A.)

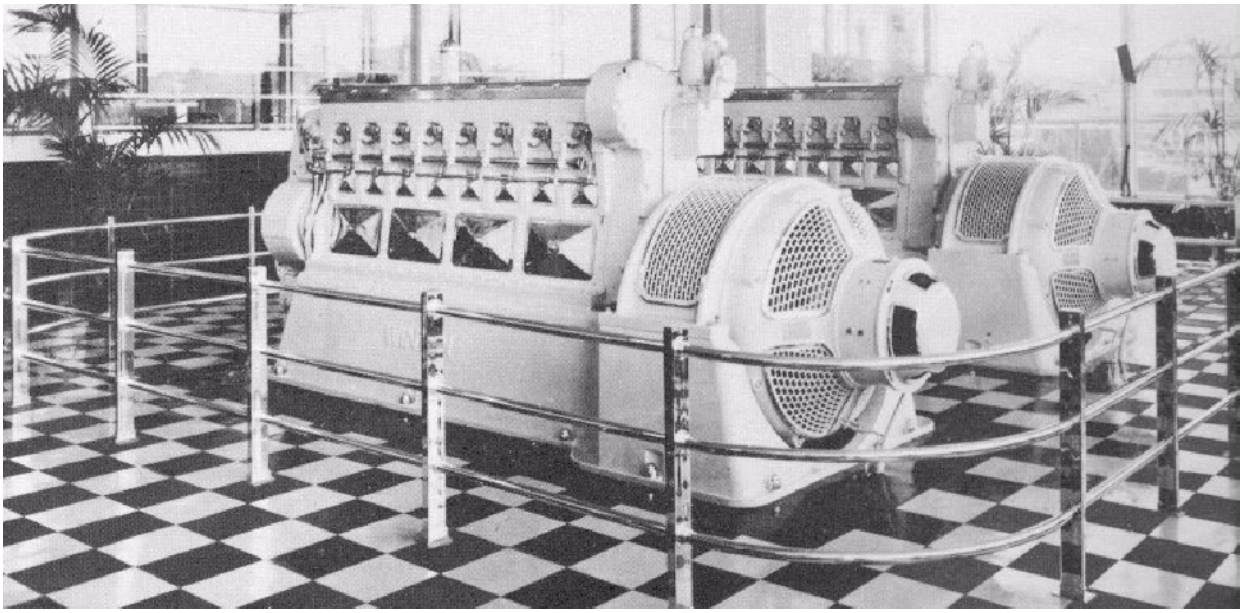
(Note: The exceptional life and career of Alexander Winton is an amazing but little known story. The story is well worth telling at a future date.)

At this point in engine development, Winton had developed an 8–cylinder in–line distillate engine for locomotive use. However, a maximum of about 800 hp seemed a ceiling for an engine size that could be put into a railroad car body. Since the GM engine was not ready, GM had the Winton design converted to a two–cycle diesel operation and adding a Roots blower as the Winton 201 (approximately 600 hp @ 750 rpm). Two–cycle diesels had been around for a few years, but they were large, cumbersome, unreliable, and unsuited for railroad use. GM/Winton's design was to be relatively light weight and intended to supplant the gasoline and distillate engines then in use.

Ralph Budd was the CB&Q's president and made a decision to create a train with potential to revolutionize railroad passenger service in the Depths of the Great Depression. The CB&Q (Burlington Route) was already operating more than 50 motor cars on its branch lines and local main line service. In 1933, Ralph Budd chose the Edward G. Budd Manufacturing Company (no relation) of Philadelphia to design a lightweight train using stainless steel and their newly patented "Shot–Weld" process. The train was to be distinctive and the design team was given wide latitude on the design. The criteria wanted by the CB&Q was a light weight train powered by a diesel engine, capable of speeds in excess of 100 mph, equipped with a Railway Post Office compartment, space for 25 tons of baggage and express freight, and coach seating for approximately 70 passengers. It was up to the Edward G. Budd design team to meet the criteria.

What was lacking for the design was a suitable engine. Ralph Budd saw two GM/Winton 201 diesels being fabricated at the Cleveland Diesel Division for the 1933 "Century of Progress Exposition" and tried to buy one for his "streamliner". If Budd had known how balky GM's Winton 201 engine was and its recurring maintenance problems, he might not have been so enthusiastic. However, GM assured Ralph Budd that they would have an improved model ready for him in about a year that he could install in his new train. Mr. Budd took it on faith that GM would deliver and stand behind their reputation to make it good. The resulting engine was the Winton 201A.

The 1934 Pioneer Zephyr was successful beyond their wildest dreams. The operating costs for the Zephyr was 34.2 cents per mile versus 63.7 cents per mile for the steam trains it replaced. Because of their lower center of gravity, the Zephyr could take curves 20 percent faster than a conventional train and run at more than 90 mph for extended periods. Because of its faster speed and lower maintenance, the Zephyr replaced two steam trains. The Zephyr was often sold out months ahead. People were willing to stand in the aisles rather than accept a seat on a conventional steam train.



The Winton 201 Diesel Engine and Generator System in action at the 1933–1934 “Century of Progress Exposition in Chicago

For publicity and a demonstration of its capability, the Zephyr departed the Denver Union Station at 5:05 a.m. on May 26, 1934 and sped 1000 miles non–stop to arrive 14 hours later at 8:09 p.m. at the opening of the second year “Century of Progress Exposition” stage in Chicago. The run used a little over 400 gallons of diesel fuel from a 600 gallon tank (at 18 cents/gallon). The little train ran in ser-

vice until 1960. The CB&Q purchased nine of the Zephyrs in various train lengths between 1934 and 1938.

In 1938, the CB&Q made an agreement with the operating unions that it would not purchase any more trains of the Pioneer Zephyr design. The problems with the design were:

- the motor man was at the level of any intersection collision and there was no escape. Any collision was fatal.
- because of the low front seat, the motor man was subject "road hypnosis" when running at night.
- The train rode on articulated trucks and the whole train had to be removed from service if there was a problem in one of the cars.

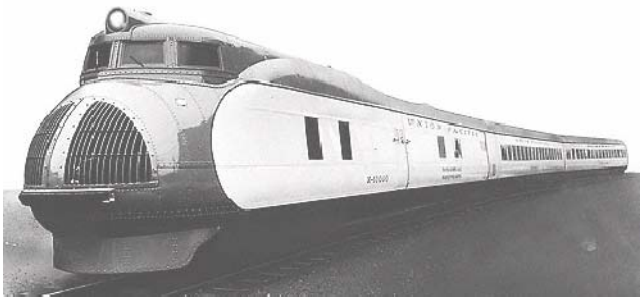
In 1932, the Pullman Company built a demonstrator motorcar called the "Railplane". It could be called the first "streamliner". It was designed by William B. Stout, an aeronautical engineer and the designer of the Ford Tri–Motor airplane. It had a tubular frame and an aluminum skin. The 60–foot motorcar weighed only 12.5 tons, about one tenth the weight of a typical passenger railcar of the same year. It did 90 mph in tests and was tried out in service for a short time. It was not a commercial success, but it was displayed at the "Century of Progress Exposition" where it attracted the attention of W. Averill Harriman, chairman of the board for the Union Pacific.

Harriman liked what he saw in the Railplane as a basis for a possible "supertrain"; a fast, light, novel in appearance passenger train that could replace those costly and high maintenance steam trains. The new "supertrain" design became the Union Pacific M–10000. Mr. Harriman wanted to beat Ralph Budd to market with his new train. When he found that the diesel motor was not ready yet, Mr. Harriman chose the Winton V12–191A (600 hp) distillate engine for the power car. This engine, because of its poor efficiency and high maintenance, was one of the fatal flaws in the design of the M–10000.

From the National Public Radio, "American Experience":

In some ways, the M–10000 was revolutionary. Made of aluminum alloy, the three cars together weighed only 85 tons; a conventional 10–car steam train weighed roughly 1,000 tons. The fully loaded train —116 passengers and crew members, 25,000 pounds of baggage and mail —needed 500 horsepower to achieve a speed of 90 miles per hour; a conventional train, 4,500 horsepower. The engine itself was lighter, as was the entire power plant, including the auxiliary backup engine (20 tons as opposed to a whopping 316 tons on a conventional train). Furthermore, the distillate fuel, stored in tanks in the floor, could carry the new train 1,200 miles without stopping for water or refueling. This was 12 times the distance a conventional passenger train could run on a load of coal.

The decor, too, was created with comfort and efficiency in mind: indirect lighting, pale colors, cork tile on floors to absorb sound. Even the items on board kept the train's weight down: standard china service for a passenger train tipped the scales at 530 pounds, but streamliner crockery was made from a new lightweight material that weighed only 189 pounds.



However, the M–10000 had several fatal flaws. "While visually attractive and able to run at rapid speeds, the M–10000 did not match the Zephyr in terms of state–of–the–art technology," notes historian Mark Reutter. "The Zephyr used the first high–speed diesel engine, which was the forerunner of all modern locomotives, while the M–10000 used a

less-efficient distillate oil engine. The Zephyr's stainless steel construction was perfect for high-speed rail travel, while the M-10000's aluminum sheathing proved problematic and the train was scrapped in 1940."

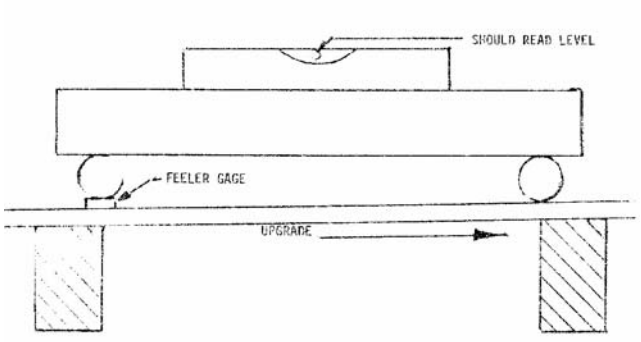
Following the wild success of the M-10000, Union Pacific added nine more streamliners to its fleet over the next seven years. Though it was always technologically imperfect, and in fact was retired from service by 1940, (and scrapped for the war effort during WWII*) the M-10000 had accomplished Harriman's goal of reviving his company's fortunes, and it had also injected excitement and glamour into rail travel. "They really don't run this Union Pacific train," one awestruck observer of the M-10000 said. "They just aim and fire it."*

Next month: The GM-567 sounds the death knell for steam locomotives.

Measuring Grades

Contributed by Bill Dippert

The following copy is from a handout from Dave Sykes many years ago at a NMRA - PNR convention. It works for all scales, it is scale independent. The only variable is the 5 inches — that represents the number of inches between the round rods. For example: if you wanted it longer for G scale, say 12 inches for instance, then you would multiply each decimal by 12 instead of 5. This assumes 12 inches between each round rod. The rod diameter is not a factor, but the distance between the vertical centerline of the two rods is a critical measurement.



This device is known to machinists as a sine bar and if we ignore a small difference between the trig functions sine and tangent at these small angles, we can use it as a simple tool to establish grades. Grades are expressed in percents which are also written as a decimal. The decimal is the form we use and by multiplying by five we have the amount needed to put under one rod of the sine bar to establish the grade we desire. Simply raise or lower the amount of feeler gages until the bubble in the level is centered. The chart below has the math done for you.

Grade	Gage
$^1/_4$% = 0.0025	= 0.0125
$^1/_2$% = 0.0050	= 0.0250
$^3/_4$% = 0.0075	= 0.0375
1% = 0.0100	= 0.0500
$1^1/_4$% = 0.0125	= 0.0625
$1^1/_2$% = 0.0150	= 0.0750
$1^3/_4$% = 0.0175	= 0.0875
2% = 0.0200	= 0.1000
$2^1/_4$% = 0.0225	= 0.1125
$2^1/_2$% = 0.0250	= 0.1250
$2^3/_4$% = 0.0275	= 0.1375
3% = 0.0300	= 0.1500
$3^1/_4$% = 0.0325	= 0.1625
$3^1/_2$% = 0.0350	= 0.1750
$3^3/_4$% = 0.0375	= 0.1875
4% = 0.4000	= 0.2000
$4^1/_4$% = 0.0425	= 0.2125
$4^1/_2$% = 0.0450	= 0.2250
$4^3/_4$% = 0.0475	= 0.2375
5% = 0.0500	= 0.2500

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Schedules & Timetables

Make sure you check the calendar on our Website at **http://www.rcgrs.com/** for the most up–to–date schedules and timetables.

Anyone interested in having an Open House or sponsoring an event, please contact **Donald Golgert at 360–896–1778 or grammabob@wa–net.com**. A goal for 2006 is to always have one open house or event on the second Saturday of the month. The other events or open houses can "float" on any of the dates in the month.

May 13, 2006, Saturday, 12:00 to 5:00 p.m.: Open–house at Dennis & Carolyn Rose's, 18325 Jaylee St. Beaverton, OR, 503–649–4904. It is Dennis' birthday (no presents). Main dish and dessert by the hosts. Single attendees – snacks are welcome. Couple attendees – salads are welcome. Second quarterly business meeting.

June 10, 2006, Saturday: Track laying party at Steve & Mimi Cogswell's, 17520 Holly Lane, Oregon City, 503–650–4682

July 3 – 9, 2006, National Garden Railway Convention, Santa Clara, California:
Web Site: www.bagrs.org/convention/index.html

July 22–23, 2006, Saturday & Sunday, 12:00 p.m. to 6:00 p.m., RCGRS Summer Tour: Coordinator is Bill Derville. Help is needed from all members.

August 12, 2006, Saturday: Open house at Bill and Brenda Derville's. The annual auction is planned for this date.

September 9 – 10, 2006, Saturday and Sunday: Open house at Jeff Lange's. Third Quarter business meeting on Sunday.

September 17, 2006, Sunday: Open house at Gary and Jonette Lee's.

October 14, 2006, Saturday, 4 – 9 p.m.: Open House at Shannon and Millie Pratt's.

October 28, 2006, Saturday, 5 – 10 p.m.: Open house at Allan & Kathryn Warrior's. Halloween trains and night themes.

November 11, 2006, Saturday: RCGRS Annual Banquet.

December 8, 2006, Friday: Open house at Jan & Rae Zweerts'. (Christmas Ships)

Editor's Note: The deadline for the June newsletter is May 25, 2006.

Publicity photo by the CB&Q extolling its first diesel powered trains, trucks, and busses. The experimental LaSalle automobile in the foreground is also diesel powered.