Founded by Dave and Beth Carr in 1995

February 2005

President:	Pat Wicker	(503) 612 8499	pwicker@aracnet.com
Vice President	Carl Petterson	(503) 245 8335	tomten@easystreet.com
Treasurer	Bud Statton	(503) 324 9514	BudStatton@worldnet.att.net
Membership	Carl Petterson	(503) 245 8335	tomten@easystreet.com
Photographer	Bob Diffely	(503) 246 9206	blinda@saw.net
Editor	Bob Diffely	(503) 246 9206	blinda@saw.net
Webmaster	Greg Dermer	(503) 281 9238	depmco@easystreet.co
Member at large	Bill Miller	(503) 246 2175	bilau@gte.net
Web site	http://users.easystreet.com/depmco/pme or		

www.portlandmodelengineers.org

Would you trust this man to host a model engineer's meeting? Well we were skeptical too but things turned all right. In fact, **Roger Rudert** did a splendid job of opening OMSI to our club for the January meeting. The club had a good turnout for the meeting but was a little sparse on the models for view. Fortunately **Henry Casson** and **Tom Senior** brought their projects. See inside for details.

February Meeting

Saturday, February 12, 2005; 1:00pm

Steam Tug Portland. It is tied up on Portland's West Side Waterfront Seawall between Burnside and Morrison Bridges. Member Jim Oliver will be our host. Identify yourself as a member of Portland Model Engineers so you won't have to pay an admission fee. The tug's boilers will be operating to test the equipment (main engines, auxiliaries and whistles) during our visit. Activities associated with a normal river run will be done except it will not leave the seawall. It will be warm in the boat, no matter what the outside weather is, because the boilers will be heating the inside areas.

Nearby on-street parking or City parking at NW Front & Davis is the only parking available, unless you can take the bus downtown. MAX light rail is free downtown and runs up 2nd Ave, 3 blocks away. You can park downtown anywhere and save some walking with MAX. Think of it as a combined rail-marine adventure.

Future Programs

Saturday, March 12, 2005; 1:00pm

Southern Pacific Roundhouse, near SE 17th Ave. and Center St. Member Al Pohlpeter will be our host. Portland owns the three steam locomotives but they have been restored by rail enthusiasts. SP 4449 (4-8-4) was restored for the 1976 Bi-Centennial. SP&S 700 (4-8-4) was restored later. Both power excursions at times. UP 197 (4-6-2) is under restored. A few diesel locomotives are also on exhibit. (Maintenance positions may be available for the mechanically inclined).

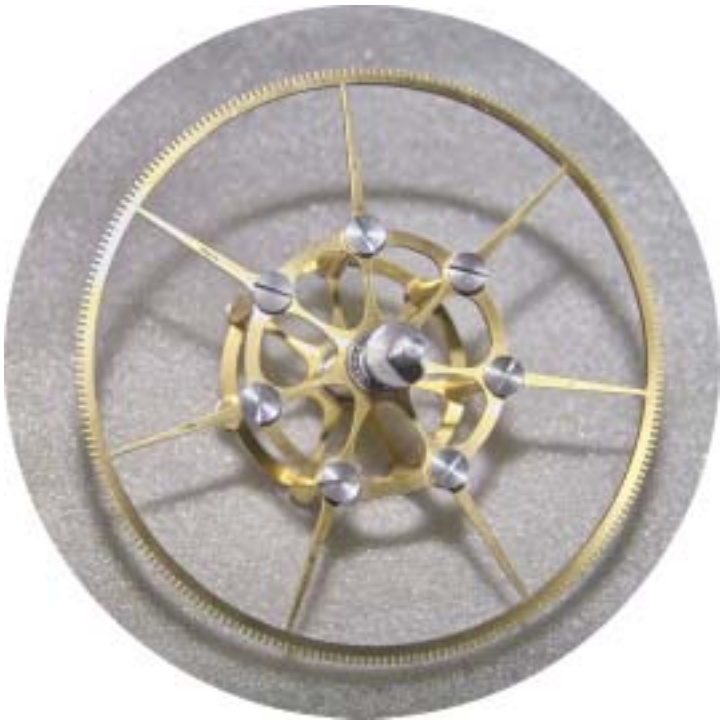
Enter from 17th onto Center, passing between industrial buildings. Work your way back and right until you get to the roundhouse. There are no formal roads and you will pass lots of parked trailers. Park near the roundhouse as much out of the way as you can manage. If you park where you shouldn't your vehicle might be flattened by a train.

Later Meetings

July 2005: Club Picnic at Bud Statton's house near Banks. This year he promises to make his iron cupola work.
September 2005: GEARS Model Show at the National Guard Armory, NE Portland.
Other future meeting locations have not been confirmed but include Tom Miller's Scholls Railroad, John Pohlpeter's Music Machine Museum and the Iron Ranch.

Membership News

It is time to renew your club dues for 2005. Forty four members have already renewed or have just joined. Club membership now includes 117 members, the most we have ever had. Please pay your $12.00 at a meeting or mail your dues to Carl Petterson, PME Membership, 1631 SW Pendleton St., Portland, OR 97239.



Henry Casson (above) holds the clock wheel he made (and shown upper right in close up). To aid him in marking out precision locations, he developed the optical center finder shown at right. This clever device was glued together in a non precision way but becomes precision after it's center axis is calibrated by revolving the shaft in a precision spindle and engraving a circle precisely around the shaft's axis. Good job Henry. **Tom Senior** (lower right) explains his ball turner (shown in close up below). This heavily constructed attachment fits over and revolves around the nub on a lathe cross slide. The cutting bit then is

moved manually in a circle cutting a spherical shape. Tom didn't say if he used this to cut the ball handles in a quorn.

Chuck Stark (left) holds a bag of pure rubber he brought back from his recent trip to southeast asia (where he barely missed the tsunami that struck December 26). He also displayed a large sheet of rubber which started a lot of gears turning in the minds of the modelers wondering how they would use this fascinating material.
Below left is a picture taken at **GEARS**. It is an Atkinson cycle gas engine with the fascinating linkage shown close up in the inset. **Bill Bartram** built and brought this intriguing engine for the show.

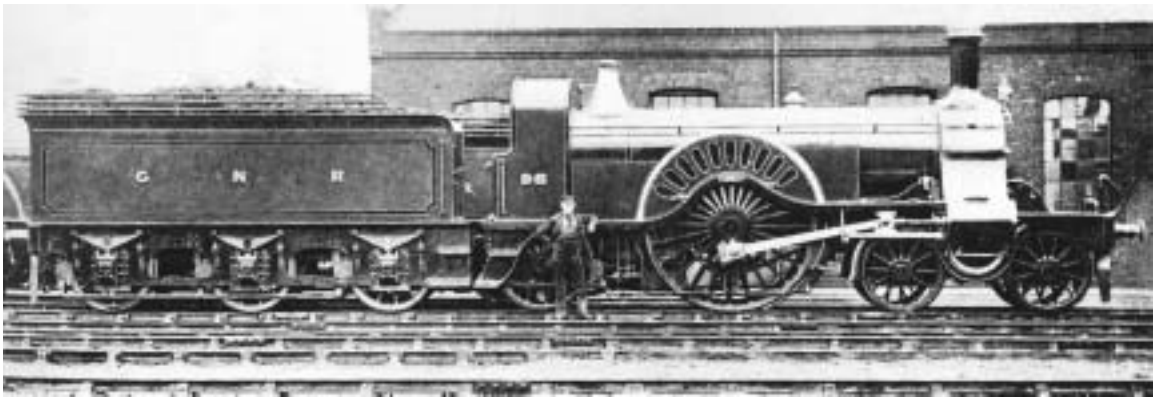
This hodge podge of pictures shows the interests of the membership. At left **Greg Swenson** and **Hans Stangier** mentally hypothisize what they would do with this CNC router. Below left **Steve Hampson** examines a submarine periscope. Directly below, the membership fondles end mills selected from a sea of end mills shown at page bottom.

The Great Northern Railway (UK) 8 Foot Locomotives

As an amateur historian I am always curious about technology that solved problems long ago. While reading about an old locomotive that was outstanding for its time I thought it should be shared with kindred souls to demonstrate progress since 1870.

In 1868 a 46 year-old Scotsman, Patrick Stirling, was appointed Locomotive Engineer for the Great Northern Railway (GNR) in England. Patrick Stirling was the son of Rev. Robert Stirling who invented what we now call the Stirling Cycle or hot air engine. Early in his life Patrick had been apprenticed to his uncle at the uncle's Dundee foundry. In 1853 he was first appointed as Locomotive Engineer to a railway in Ireland. By 1868 Patrick's training had given him a wide knowledge of both the theory and practice of mechanical engineering as it existed at the time.

Stirling began his GNR career by cautiously modifying designs of his predecessor for engineers of that era were both prudent and conservative. By 1870 his confidence allowed him to supervise the design and construction of the Class 4-2-0 locomotive which is shown in the picture below.



Stirling 8 Foot Driver Locomotive

Although it looks strange to 21st Century eyes, this locomotive was the first of a class of locomotives, which from 1870 to 1898 ran most of the express trains of the Great Northern Railway with economy and reliability at higher speeds than any other trains in the world. They were designed to take trains of 150 tons (railcar weight) at average speeds around 51 m.p.h. between stops, work they performed with a more than adequate margin of power. When loads increased to 250 tons and average speeds to 55 m.p.h. they began to be outclassed. While on occasion they were able to handle such trains satisfactorily, they could not be relied upon to do so in all conditions of wind and weather. (For reference an American passenger car weighs about 70 tons and operates on trains whose average speeds are not much faster.)

The greatest difference separating today from the 1870 to 1900 period is that in those days the only high speed attained anywhere were those of the steam locomotive hauling trains. And it must not be forgotten that during the Stirling era the Great Northern was not only the railway with the fastest running times in Britain; it was the fastest in the world. So that any Stirling single on an express to Leeds or the North would normally be covering more miles in the hour than could be attained anywhere else by human invention or effort.

Model Engineers use a variety of methods with modern machine tools, even CNC. Consider making locomotive wheels and plate frames under the following methods:

Forging Driving Wheels. The method of building-up the wrought iron locomotive wheel in the days before steel castings were available was an elaborate one. First, each spoke was forged, tapering in thickness from one end to the other. The thicker end was set up and then forged into the shape of an arrowhead. The thinner end was sometimes drawn out into a T-shape, the top of the T being curved to form a segment of the rim of the wheel. When all the spokes were assembled there was a complete rim, requiring to be welded between each spoke. Some times a bar was bent round to form a complete rim, welded to form a ring, and the thinner end of each spoke was welded to this rim.

The thicker arrowhead ends fitted together to form the boss. A circular plate below and above, with the wheel lying horizontally, gave the boss the extra thickness usually called for on the drawing and reinforced any slightly unsound welds. The whole boss assembly was raised to welding heat on a smith's hearth, and forge welded under the hammer, in earlier days a drop hammer, but in later years at Doncaster a steam hammer, was used.

To produce such wheels was indeed highly skilled work and each wheel occupied many man-hours of labor. Wheels were therefore expensive items on the earlier locomotives. With cast-steel wheels it is rare indeed for a locomotive to have needed new wheels.

Building the Locomotive Side Frames. In those days (about 1870) the edges of frame plates, after being roughly cut to profile, were cleaned up by hammer and chisel, usually at the hands of apprentices, and were finally draw-file finished. Even as late as 1903 the curved footplate angle irons of (an 0-8-2-tank engine) were forged rather too long and had to be reduced to length by hammer and chisel. **(**Can you imagine the long boring days for an apprentice at that time?)

Information was taken from *The Stirling Singles of the Great Northern Railway*; K. H. Leech & M. G. Boddy; David & Charles Locomotive Monographs; London; 1965

- Carl Petterson -