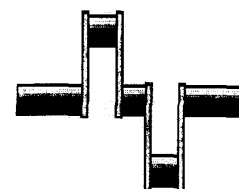


The Crank Calls

The Bay Area Engine Modelers Club, Branch 57 of EDGE&TA

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February 2003

www.baemclub.com

NEXT MEETING
February 15, 2003
10 AM AT
Robert Schutz's Shop
366 40th St.
Oakland, CA



Clennell Tomlinson's 18-cylinder, 1/8th-scale, opposed piston, marine engine.

Meeting Notes, Jan. 18, 2003

Carl Wilson

Bob Kradjian was at the Cabin Fever Expo in Pennsylvania and I am filling in. Cabin Fever has become the premier Model Engineering show in the United States and at least six of our members are attending.

There were two guests at this meeting: Vic Sprites (I hope I did not misspell your name) and Brian O'Connor. Brian is building a Wall 30cc on a Sherline lathe as well as a Stirling cycle fan. BAEM extends a welcome to Vic and Brian, and Ken Reynolds in Kentucky.

George Gravatt had a first pop on his silver bullet. It should show up at the next meeting. First Pop honors also went to Scott Overstreet with his hot tube ignited Briggs and Stratton. By gosh! It worked! A closed stainless tube was silver soldered into a spark plug body in place of the insulator and central electrode. When this tube is heated with a torch, the hot spot will ignite the air-fuel mixture which is forced into it during compression. The flame will travel down the tube and ignite the main charge. Scott says that this engine 8 strokes because it is a high speed engine (runs about 1200 rpm.) Hot tube ignition systems were used only on low compression, low speed engines.

Lew Throop reported that we have plenty of money for our forthcoming insurance premium, but I noticed that he was augmenting our vast treasury by collecting dues. Please pay your dues to Lew if you wish to be member.

Of course it is the duty of the secretary to make a record of important comments at each meeting. That being said, I must report to you what our esteemed president said to me after calling for nomination and election of our officers for 2003, "I don't know why we bother with all this, I wasn't even at the meeting when I was elected!" Well, we showed our appreciation by unanimously returning him to office for another year and then continued voting the party line and returned Bob Kradjian (absent this meeting, do we see a trend here?) as Secretary, and Lew Throop as Treasurer. Hey Ken, you've been railroaded, again. Thanks for the excellent work, all of you.

Well, the election results were no surprise, but the next order of business was. Scott Overstreet announced that he was retiring after 3 years of managing the Tech Topics portion of the meeting. His goal for Tech Topics was simple: to get knowledge out of the heads of the experts in the club and into the minds of the rest of us. But this simple goal required a lot of his time to define a topic, find a speaker, write the preview for the Newsletter and the summary of the previous month's topic. Scott says that he is retiring "to pursue other interests." On behalf of the club members I say, "Well done and thank you, Scott."



Pat O'Connor has been railroaded into managing Tech Topics. Boy we do have a way with people! He told me that he only has three topics that he can think of. That won't take us very far into this year. Please help him out with ideas. Even better, volunteer to present a topic yourself.

Robert Schenk presented the first of the Bits and Pieces: a Stuart Double 10 steam engine with reverse gear that is intended to propel a tugboat. Robert noted that Stuart rates the difficulty of this project as 1 out of a range of 1 - 5, but that was not true of the reverse gear. That part of the project accounts for about one of the eight years spent so far.

Dwight Giles, Ken Hurst and Mike Neal are building 3 pushrod, overhead valve Wall 4's. Dwight showed the special tools, which he used to make the o-ring grooves in the lifter bores. The modification should reduce oil leakage where the lifters fit into the block. These engines will have "hot" cams and Hall effect ignition.



Carmin Adams brought the gears from his 1/8th scale model of a Fairbanks-Morse 3cylinder 50hp engine. These gears required the use of a dividing head, his first use of that accessory. Murphy's Law caught up with him and he missed one index move. Suddenly he had one very thin tooth next to a

very thick one! Carmine drew upon his experience gained from a boyhood on a farm. At 14 years old he had figured out how to repair the teeth on the gears used in seed planters by brazing and at 80 some years he used that knowledge to repair the tooth on this gear. After that he replaced the gear in the dividing head and finished cutting the teeth.



John Meredith showed the five-cylinder radial engine being built to a design by Forrest Edwards. Examples of this design have been featured on two covers of SIC Magazine. John liked some of the modifications shown in one of the photos and designed similar mods for his project. Spark plugs and an ignition system replaced the original glow plugs, and a mixture diffuser was added to the back of the crankcase. The original design used tie rods from the cylinder head to the crankcase to secure the cylinders to the case. The high thermal expansion of the aluminum cylinders makes it difficult to adjust the valve tappet clearance. John added a bolting flange to the base of the cylinders and eliminated the tie rods.



John Vlavianos brought a model of a Kurtis midget racing car. This is a project for a customer who supplied the aluminum body and the 2-cylinder inline, air-cooled French-built engine. John researched, designed, and built the rest of the car: suspension, drivetrain, frame, and wheels.



Carmin Adams' experience with the gear prompted Oscar Ortiz to suggest a Tech Tip: Always check the setup of an index head by bluing the work with Dykem and making a barely visible trial cut. This is a variety of "measure twice and cut once." It will also reduce your uttering of "Workshop Esperanto" and throwing tools around.

John Meredith (in a phone conversation) related the method for making piston rings suggested by Forrest Edwards, the designer of the 5-cylinder radial engine:

- Turn and bore a tube of cast iron leaving extra material on both the OD and ID
- Slit the side of the tube - the width of this slit will determine the wall pressure of the ring
- Chuck the tube in a 3 jaw chuck and tighten until the slit is closed
- Machine to finished size
- Part off to width
- Machine (file or sand) the gap

This is very similar to the method described by John Palmer in his Tech Topics on piston rings at the August 2001 meeting. See the September 2001 Newsletter for details.

Notes from the President:

We're going to have another exciting year in the club, Bob has the club scheduled for members to show our engines at several car show. Rumor has it there is going to be a West Coast Cabin Fever Show, Bob will tell us all about it at the meeting. This club is one of the largest Model Engine clubs in the USA, with our people volunteering their time the club would not have the success that the club has had. I would like to thank a few people. Robert Schutz for the use of his building for the monthly meetings, Jim Piazza outgoing Newsletter Editor, Scott Overstreet outgoing Tech Topic Coordinator. Thank you from all the club members.

Pat O'Connor is the Tech Topic Coordinator & Bill Nickels will be the Editor for our Newsletter.

See you at the meeting!!!

Ken Hurst

Ken Hurst's V-8's are 1"x1" bore& stroke, they have 90 deg crankshafts and a few trick parts.



Scott Overstreet presented a condensed, illustrated history of the internal combustion engine from the cannon of the 1600's (one cylinder, one stroke, threw the piston away on every stroke) to the 4 stroke, hit and miss engines of the early 1900's. He emphasized the development of ignition systems from the earliest electrical "inflammers," through the various open flame systems and hot tubes, and to the low-tension igniters. Along the way he discussed the early atmospheric engines that worked on the contraction of exhaust gases and the advantages of the "explosive" engines that used the expansive properties of hot gases. This led to a discussion of the importance of high compression ratios for achieving more fuel economy (efficiency.)

Scott has provided this additional information for this newsletter:

Bay Area Engine Manufacturers: There have been about 40 manufacturers of internal combustion engines in the San Francisco Bay Area since the 1880's. There were several more in Stockton, Sacramento, Chico, and Fresno and a few in Los Angeles and San Diego, but most of the West Coast engine manufacturing was in the Bay Area.

Places to see running engines:

Coolspring Power Museum

Coolspring, PA
814-849-6883
www.coolspringpowermuseum.org

IC engines only from the slide valve Otto on through large oil field and mill engines of the '30's

Rough & Tumble Engineers

Kinzers, PA
717-442-4249
www.roughandtumble.org
Steam, gas and diesel engines; steam and gas tractors, farm implements

Western Minnesota Steam Threshers Reunion

Rollag, MN
www.rollag.com
Steam, gas and diesel engines; steam and gas tractors, farm implements;
600 hp Snow engine

Science Museum

Manchester, England
Excellent running steam and IC engine museum from beginning to present

German Science Museum (Deutsches Museum)

Munich, Germany
Complete display of gas and diesel engine development

Bibliography

Cummins, Lyle, Internal Fire, Carnot Press, Wilsonville, OR
Mackeand, Crawford, Sparks and Flames, Tyndar Press, Box 236, Montchanin, DL 19710
Wellman, Ellis, Hot Tube Ignition, Coolspring Power Museum, Box 19, Coolspring, PA 15730
Grayson, Stan, Beautiful Engines, Devereux Books, Box 503, Marblehead, MA

The Monster Engines in San Mateo:

In 1908 just 23 years after the invention of the Otto 4 stroke engine, 3 monster 5400 hp engines were installed in San Mateo, CA for the California Gas and Electric Corp. Some of the details of these engines, now long gone are:

Manufacturer: The Snow Steam Pump Company, Buffalo, N.Y.

Rated Power: 5400 hp continuous generating 4,000 kW (that is 4 megawatts)

Overload Power: 8500 hp short time generating 5200 kW Operating Speed: 88 RPM

Configuration: 2 double acting cylinders in tandem on either side of the flywheel/alternator forming a "U"

Shape with 8 combustion chambers

Bore: 42 in Stroke: 60 in Displacement: 665,012 cubic inches

Ignition: Low tension igniters Fuel: Producer gas (oil cracked by superheated steam)

Crankshaft weight: 99,734 lbs. Diameter of crankshaft: 27 in

Journal bearings: 30 in dia, 56 in long Crank pins: 19 in dia, 19 long

Flywheel diameter: 23 ft Flywheel weight: 50 tons

Weight of main frame: 85 tons Starting system: Compressed air

Camshaft diameter: 15 in Exhaust pipe diameter: 24 in



Thank you, Scott, for this excellent presentation.

TECH TOPICS

BY
PAT O'CONNOR

First a big thanks to Scott for the great job he did running TECH TOPICS for the last 2 (or was it 3?) years. He managed to cover almost all phases of building an engine. The only subject I can think of is gasket making. So, for Feburary's meeting we will have an open forum type discussion concerning gaskets. Be prepared to share with us where you use gaskets, which materials you use and why and how you cut a gasket. Bring any special tools to pass around . Time for a demonstration can probably be arranged.

Check out this web site about
John's Octane Engine

<http://www.geocities.com/runyardj/octane1.html>

Recommend by Pat O'Connor

Cabin Fever Report
By Bob Kradjian

Cabin Fever was a great show, and despite the cold weather, six BAEMers made the trip.

Tom Armstrong, Bill Chernoff, Mike Rehmus, Bob Shores, Jerry Hale, and your secretary. The facility at the York Fairgrounds is HUGE. Imagine four PRIMEs and you have a rough idea of the space. However, many of the tables were empty. Perhaps the nasty weather kept people away at the last minute.

Arriving Friday afternoon, I had the opportunity to speak at length with two of the truly great men in our field of miniature engineering, George Luhrs and Rudy Kouhopt. I am happy to announce that both have agreed to join our group. In the unlikely event that someone is unaware of the full extent of their contributions here is a brief summary.

George Luhrs Is clearly the best subminiature engine builder in the world. No one can match his four-cylinder, in-line, four cycle, ignition engine, with a QUARTER-

inch bore. And if that wasn't enough, he followed with a quarter inch bore and stroke five-cylinder radial! All of you have seen his wonderful 7/16" Stover hit and miss and the Briggs-Stratton type single. Witness these wonders on his nicely done web site at minimodelengines.com

Rudy Kouhopt's contributions to the hobby are numerous but engine design, education and publishing head the list. He has written a classic three-volume set for the "Shop Wisdom" series, over 250 articles, and thirteen videos. For details of his career visit www.craftsmanshipmuseum.com/Kouhopt.htm.

Welcome to both of these fine gentlemen.

Cabin Fever promoters Gary Schoenly and his son, Gared, plan a show for 2003 in Visalia. More details on that upcoming.

LOW TENSION IGNITER COIL

Mike Neal
MJN Fabrication
15216 Sydney Rd.
Dover, FL 33527
813-719-3220

George Gravatt showed one of Mike's low-tension igniter coils for use with slow speed engines which have moving points within the cylinder. Mike is a BAEM member in far away Dover, Florida. He is selling these coils for \$20 ea.

Clennell Tomlinson of Broadbridge, Heath, England reports his 18-cylinder, 1/8th-scale, opposed piston, marine engine is progressing well. He has completed the supercharger/scavenge blower and it all works fine. He has also made and fitted the spark plugs and is currently making the 3 ignition systems, the distributors are almost there. This engine is the first of its kind in miniature engine development. It is a two-stroke cycle engine. At 2,000 RPM the prototype developed 2,500 BHP. It was used in fast patrol boats by various navies including Norwegian, Greek and US. It was also used in the Osprey class PT boat built in the USA.



Ken Hurst's V-8