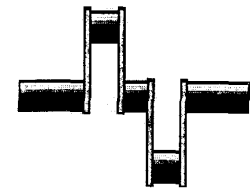


The Crank Calls

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October 2003

NEXT MEETING October 18, 2003
At the Blackhawk Auto Museum in Danville, CA
Setup 9:30 – 9:45 AM
See Page 8 for a map and driving directions.

Check out the BAEM Web Site at www.baemclub.com
Send your project photos to the Web Master Jim Piazza.
Phone: 408-446-4825
Email: jpiazza@ix.netcom.

Meeting Notes

September 20, 2003

Bob Kradjian, Secretary

President Ken Hurst called the meeting to order just after 10 am.

Frank Holyoake, a previous visitor on several occasions, joined the club this morning. Welcome, Frank!

Treasurer Lew Throop told us that our bills were paid and we have about \$1,000 in the treasury.

I reported on upcoming meetings. Our next club meeting, as recorded elsewhere in this issue, is to be held at the Blackhawk Automotive Museum in Danville. The date is Saturday, October 18 and the time is 10 am until noon. Jon Hart of Blackhawk has promised coffee for the early comers.

The much anticipated and new California show, *Men, Metal & Machines* is October 25-26 in Visalia.

For details go to www.cabinfeverexpo.com. Here, you will find driving instructions, and the number of the Radisson Hotel where a special \$79 per night rate is available for show attendees. The brochure lists the mileage from San Francisco at 225, and the driving time at 4 hours. This one should be interesting! There were a number of folks who indicated that they

would attend. If you have contacts in other miniature engineering groups where there may interest, please let them know about this show. One of our East coast members, Rudy Kouhoupt will be conducting his fine seminars.

October 4 and 5 were the dates the Golden Gate Live Steamer's held their open house at the Tilden Park facility. A report anyone?

Also taking place on October 5 was a successful BAEM appearance at the Horses To Horsepower Redwood City Car Show. Taking part were Dick Pretel, Pat O'Connor, Bill Nickels, John Meredith, and Tom Armstrong.

In the September newsletter, I mistakenly credited the coil winder to Dario Mecchi. The actual author of the fine project was Dick Remington. My apologies.

Another announcement. A fine Starrett dial indicator was mislaid at the last meeting. It has been found and belongs to? (Someone thought it might belong to Dick Levesque.)

Bits and Pieces:

Ken Hurst told of his progress with the "Five Mainer" V-8 block. On display was the block and pan along with the line-boring bars for the main and camshaft bearings. This is a very important project that in years to come may replace

the aging Challenger.

A potential problem is the illness of Al Waters, the owner of the foundry. This may delay the pouring of metal when the final patterns are completed.



Ken also showed a nifty timing device for Hall-effect ignition systems. This module (from CH electronics in Wyoming) flashes an LED when the Hall effect triggers.



Mike Neal's system has this feature built in. Mike showed his fine line of ignition products at the PRIME show.

Dwight Giles has been busy with a batch of 10 (TEN!) oscillating air engines. This is a joint project with Jeff Miller. These highly polished beauties will be offered for sale on e-bay.



Dwright Giles displayed his Wall 4 OHV. Looking good Dwright.



The last-ever PRIME show was a success. Although the back hall was not opened, there was plenty to see and a fine spirit of fellowship and fun prevailed over the three days.

BAEM made its usual

fine showing. We had more than a couple of dozen folks there and came away with three awards. The coveted first in Automotive went to Dwight Giles for his fine overhead valve Challenger V-8. It was fine to see official recognition for Dwight's incredibly good machine work.

Dave Palmer also took a first place for his very pretty Ajax, a Tiny Powers casting set and painted a lovely emerald green. With its heavy dual flywheels, it is a smooth runner. A final special achievement award was given to our amazing English member, Clen Tomlinson, for his Deltic project. Without a doubt, Clen has emerged as one of the premier builders in the world. This magnificent engine is nearing completion and is now mounted on a rotating display table. The pictures tell some of the story. Complex shapes in manifolds are not castings! He machines these pieces in halves and then brazes them together.

He has also created a nice motorized display of various opposed-piston engines. Clen answered thousands of questions with unfailing courtesy and grace.

We grouped together at the Olive Tree and had a fine time Saturday night. The club thanked the organizers of PRIME; Ram, Patrick, and Tom for their fine efforts over the seven years of the show's life. They are now cooperating with the Portland group who announced the dates for their 2004 show. September 25 and 26.

These Portland folks are calling their production the "Gas Engine and Antique Reproduction Show", or--- "GEARS." They have a website secured at www.oregongears.org. However, at the present it is not up and running. I'll note it in the newsletter when they are functioning.

The Pacific Coast Industrial and Machine Tool Show will be held at the Santa Clara Convention Center on November 11 through 13. Admission is free, contact them at www.ProShows.com/dsw. From this site, you can easily pre-register and receive a badge in the mail. These shows provide an amazing display of the latest in tooling and machines. It is well worth a visit.

See you at Blackhawk!

Photos by Jim Piazza

TECH TOPICS

BY PAT O'CONNOR

Since the October 18th meeting will be held at the Blackhawk Auto Museum there will not be a Tech Topic.

SEPTEMBER TECH TOPIC

Pat O'Connor presented a Tech Topic talk on turbochargers for internal combustion engines. Wait, a minute, that's not what was scheduled! About 8AM before the meeting Pat learned that the scheduled speaker was unable to attend the meeting. Pat rushed home, grabbed the bits and pieces of an automotive turbocharger and brought it to the meeting. He was going to present this topic sometime in the future; the cancellation just got him moving a little faster.

A turbocharger is "a centrifugal blower driven by an exhaust gas turbine and used to supercharge an engine." Supercharging is "to supply air to the intake of an engine at a pressure greater than that of the surrounding atmosphere." (Definitions from Webster's 9th Collegiate Dictionary.) The major benefit of supercharging is that more air and fuel into the engine gives more power coming out. A supercharged engine can be smaller and lighter for a desired horsepower (automobiles), it can operate at higher altitudes (aircraft), or can simply yield more power (dragsters.) A supercharger can be driven mechanically from the crankshaft – this is called a supercharger. It is only a blower, usually a Roots or screw type positive displacement.



A supercharger that is driven by the exhaust gas is called a turbocharger, turbo for short. In the picture on the left, the major castings are at the top and the rotor has been removed and placed below. The hot, pressurized exhaust gases enter the exhaust turbine (left side of picture), and spin the rotor at speeds of 20,000 to 120,000 rpm. The intake air is compressed by the impeller on the right and flows into the intake manifold.



The center casting contains the bearings and seals. This picture shows the impellers, shaft, and one bearing. It is not a ball bearing! Turbochargers use plain bronze bearings running on fairly soft shafts and fed with pressurized oil. These bearings are not pressed into their bores; they float, that is they are free to rotate in their bores. This reduces the rubbing speed on the shaft, and also reduces the problem of “whirling.” Lightly loaded, high-speed shafts in plain bearings may start to rotate eccentrically “whirling” and destroy the bearings. This section of the turbo is water cooled to reduce its operating temperature. There are ceramic shaft seals behind each impeller. They keep the gases out of the oil, and vice versa. The fully assembled shaft has to be dynamically balanced.

“Approximately 30% of the fuel energy goes into the exhaust, 30% to heat, and 30% to the driven shaft. Superchargers consume about 30% of the engine output. A turbo recovers energy from the exhaust to generate its boost, so its source is free.” (Quote from Pat)

Not visible in the pictures is the waste gate. This is a port in the exhaust gas turbine casting that vents gas to the exhaust system. This controls the speed of the impellers and thereby the amount of intake “boost.”

*Horses To Horsepower Sequoia Auto Show in Redwood City
Photos by Bill Nickels*

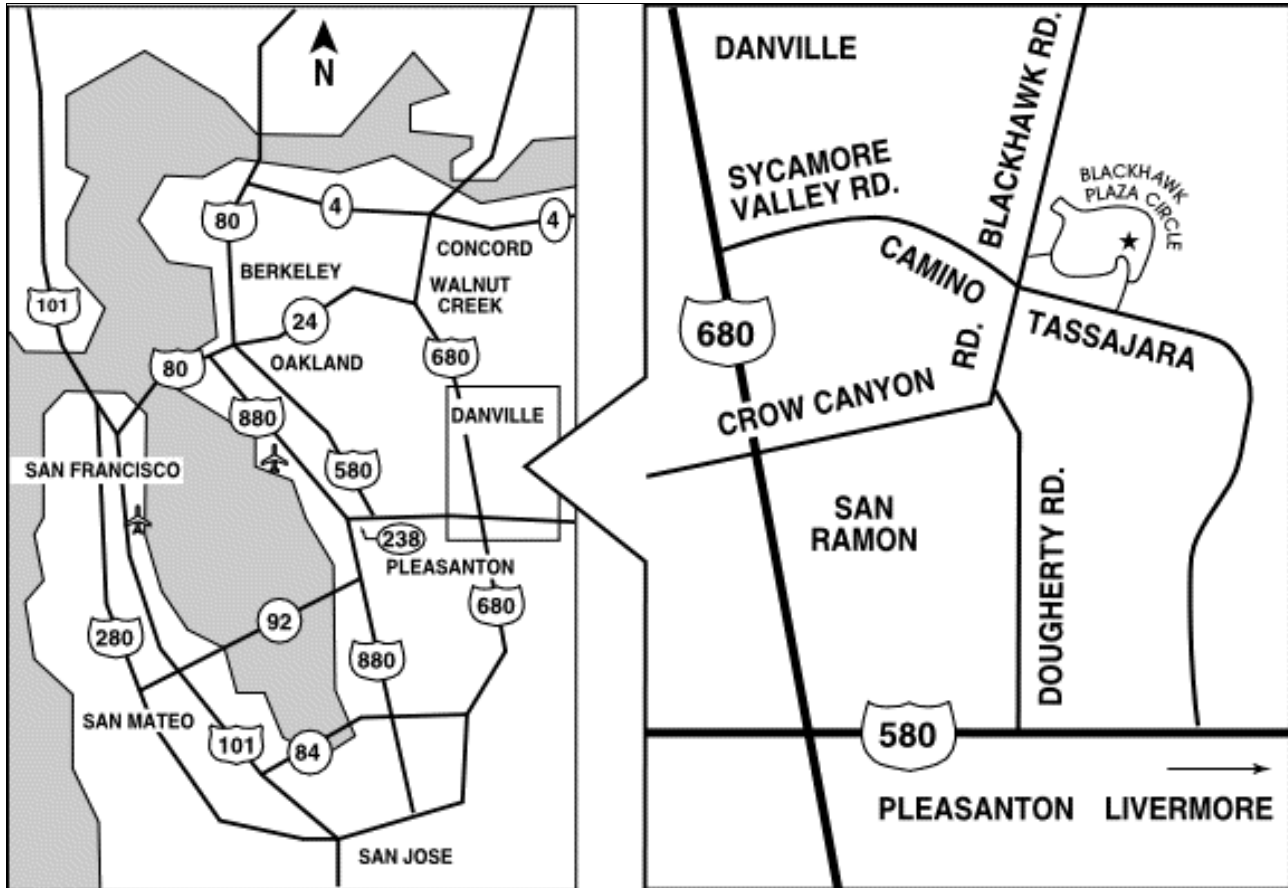


PRIME 2003
Photos by Ken Hurst



Driving Directions to The Blackhawk Automobile Museum located at
 3700 Blackhawk Plaza Circle
 Danville, CA 94506

From I-680 take the CROW CANYON ROAD exit toward SAN RAMON.
 Turn RIGHT onto CROW CANYON RD. 3.88 miles
 Turn SLIGHT RIGHT onto BLACKHAWK RD. 0.11 miles
 Turn RIGHT onto BLACKHAWK PLAZA CIR. 0.22 miles



FOR SALE

Craftsman 6 x 18 Lathe. See photo below.
 3 jaw chuck, 1/3 H.P. reversing motor
 Table/wheels \$375

Rototiller 5 HP in Good condition \$150

Contact Jim Piazza 408-446-4825
 Email: jpiazza@ix.netcom.com



WANTED

1. Three jaw chuck, 1/2 X 20 with backplate.
2. Zero taper drill chuck

Contact Dick Pretel, 408-732-6507
 Email: RPM10K@SONIC.NET

FOR SALE

Caroline Tool & Eq. HD-10 horizontal/vertical bandsaw, 3/4" blade \$250.

Contact Pat O'Connor 408-733-3710
 Email: pat1650@yahoo.com

FOR SALE

UMAX, Astra 2000U Scanner with manual, software (Win 95, 98, XP and Mac OS 8.0+) and power adapter. Requires USB port in your PC, cable included. This unit has been tested using Win 98 and XP. This unit is in like new condition. \$50.00.

Contact Bill Nickels at 408-739-2407
 Email: whnickels@aol.com