

# The Crank Calls



October 2012

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## **MEMBERSHIP \$25.00 US**

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### **NEXT MEETING**

October 20, 2012 at  
Chabot College, building 1500  
25555 Hesperian Blvd, Hayward 94545  
Doors open at 9:00 AM  
Meeting starts at 10:00 AM

### **Upcoming Events**

BAEM meetings:

October 20, 2012

November 17, 2012

Note that the San Mateo Bridge will be closed the weekend of October 19-22<sup>th</sup>. Please plan an alternate route to the October meeting if you use the San Mateo Bridge

## **MEETING NOTES**

September 15, 2012

Bob Kradjian, Secretary

President Don Jones called the meeting to order promptly at 10 am.

**VISITORS:** Ken Kuchta and his father Zig, have visited again. We first met them on June 16 of this year. Welcome and we hope to see their progress on a three cylinder Fairbanks-Morse they've been working on for some time. They're also planning a radial engine build.

**SHOWS:** Our "official" show season wound up with a small event at the Gotelli Speed Shop in South San Francisco on September 22 (See Photo below). We had a small, but highly appreciative group of car builders to hear Ken and Dwight's fine engines.



GEARS show in Portland, Oregon took place just after the meeting. A member has described this year's show as the last. He cites age and illness of the key members and a doubling of the cost to rent the Armory space as the key factors. There have been a total of nine shows.

Steve Hazelton met with students and teachers who have a robot club at Vallejo High School. They call

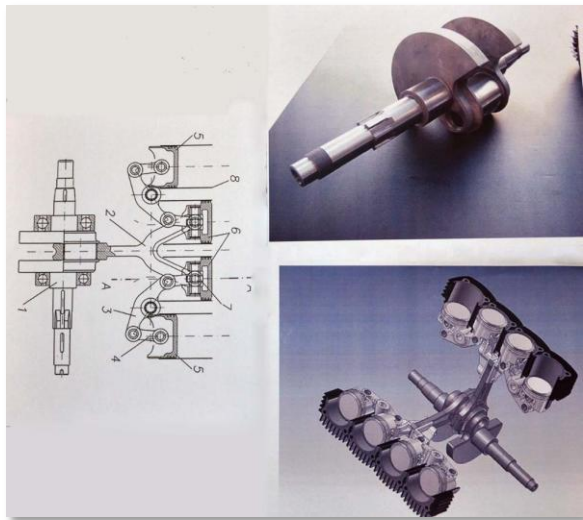
themselves the “Zombots” and are dedicated to invention and public service projects. Steve has invited them to join our meetings. More information at Google; see: “Vallejo Zombots”.

**MODEL ENGINE BUILDER:** Mike Rehmus gave us a detailed description of changes that will be made to his excellent magazine. After examining his options, he and Toni have decided to switch to a digital-only version of the magazine. Starting with the next issue (#28), they will create downloadable PDF files for their subscribers. This will reduce subscription costs to \$24 for four issues and \$44 for eight issues anywhere in the world. Digital reprints are now \$6. Current subscribers will receive two issues for every one left in their subscription. For questions contact:

[publisher@modelenginebuilder.com](mailto:publisher@modelenginebuilder.com)  
or (866) 996-8999

It would be difficult to assess the huge benefit that Model Engine Builder has given our hobby. It set an entirely new and high standard for quality of content and format. Mike and Toni should have our complete support for future subscriptions.

## **BITS AND PIECES**



Anthony Rhodes tells us of an innovative, even a bizarre, modification of a Ducati motorcycle engine. It started with a two cylinder Vee-Twin and wound up as a Vee-Eight! For drawings and details of this marvel see “Ducati V-8 Project” under Google. The eight pistons are driven from a single crankshaft journal. Pictures are better than words for this beast.



Gary Moore is making solid progress of his first engine build. He is making John Palmer’s big hit and miss, the J & E Junior. Plans are available from John for a measly \$30.00. No castings are required and no milling machine is needed. Required: a 12” lathe, drill press, arc welder, gas welder and a portable disk sander. Two inch bore, two and a half inch stroke, and twelve-inch flywheels. Gary has welded the cylinder and hopper assembly as well as bored the cylinder. He showed his fixture to keep accurate alignment between the cylinder bore and the base. Gary describes 142 parts, some of them requiring multiple pieces. Gary’s welding skill is evident with very nice fillets. When asked if he was going to use babbitt for the bearings, Gary thinks that he will pass on acquiring that skill set. Mike Rehmus described watching John Palmer preparing a babbitt pour. As the crankcase metal was heated by volunteers with propane torches, John would occasionally spit on the metal. When asked about this behavior, he informed the puzzled onlookers that the metal would be hot enough to pour in the babbitt only when the spit bounced twice. He also educated them on the unique value of a sugar pine stick when stuck in the babbitt. When it turns brown, it’s ready. Well, just a little tip for the shade-tree mechanic. Remember, John knows how to regrind a car’s crankshaft journal bearing at the roadside!





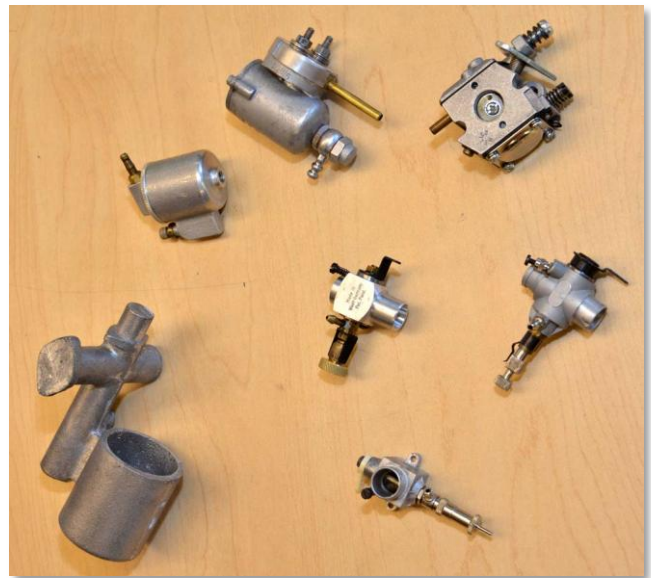
Jim Freel continues to please us with more, lovely pieces for his Black Widow V-8. This time it's the heads and valve covers. Jim used black anodization on these bits, and also plans to use the same for the engine block when it's ready. Recall, he is contemplating making the block out of solid! Dwight Giles tells us that he and Ken have sold two more casting sets, one in Australia and another in Alaska.

## **TECH TOPIC**

Dick Pretel shared his long experience with carburetion for miniature engines. He started with a chronological history of these devices that are intended to produce a proper mixture or fuel and air. The earliest two-cycle miniature engines had just a needle valve orifice in a simple tube. The needle valve is a metering device, nothing more than an adjustable needle, a seat, and a lateral hole that acts as a jet. This can suffice for an engine intended to run at full throttle.



But for our miniature engines we need throttle control. This is often accomplished by the addition of a simple rotor placed at right angles to the intake tube. The rotor has a hole matching the intake tube diameter. Rotating that rotor will change the orifice from a small area to full flow. The automotive throttle valve type (butterfly valve) is less commonly used. The single needle arrangement usually proves inadequate for operating an engine over a wide range of rpm's. Further developments included two needle carburetors to develop proper fuel/air mixtures over a wider range of rpm and load. The needle for the lower rpm range is often combined with an idle adjust stop.



A major advance followed in the form of the "compensating" carburetor. This arrangement advances the needle in, or out, of the needle valve seat. In for low rpm, and out for full throttle operation.

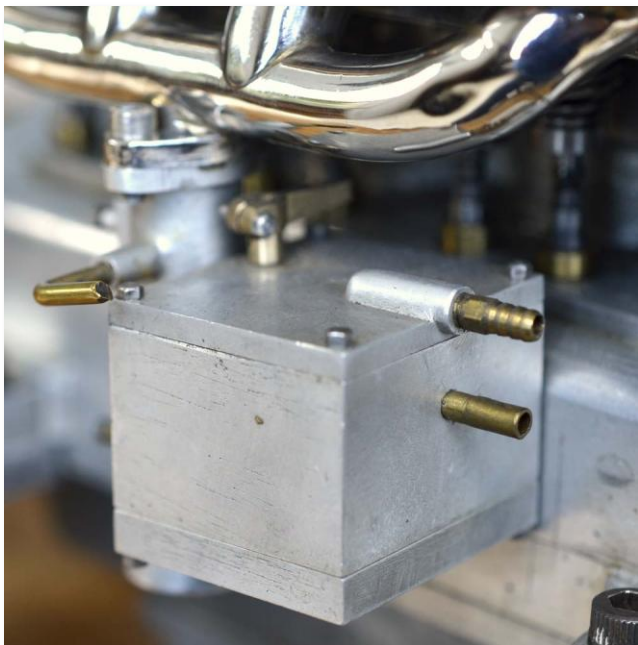
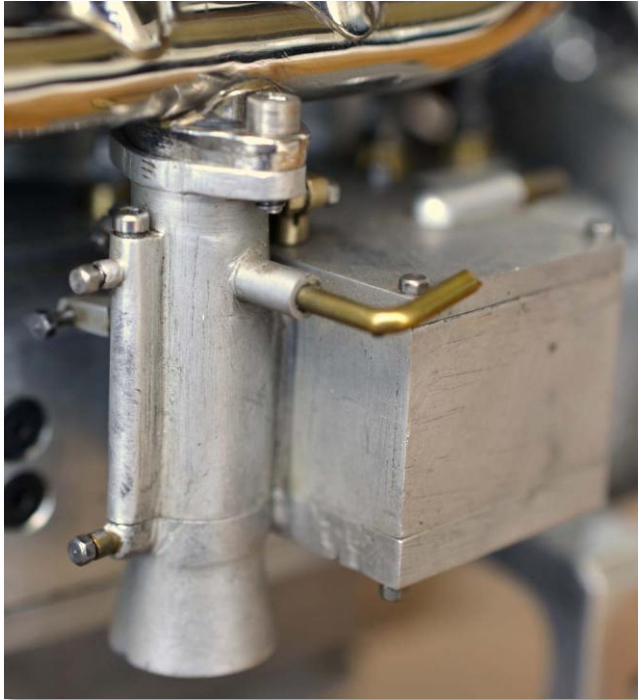
In practical terms most builders of miniature internal combustion engines use model airplane carburetors. These work fairly well, but are often inadequate in the mid rpm range or when advancing the throttle rapidly.

Venturis are used in many carburetors to increase the velocity of airflow and create a weak vacuum for fuel draw. Venturis are based on the well-known Bernoulli principle.

Fuel tank position is critical when no fuel pump is used. The one-third tank level should be just below the needle valve.

Float systems consist of a fuel bowl with an inlet needle valve and seat. This results in a constant level of fuel and less variation of pressure at the jets.

Several of our builders have used diaphragm type carburetors with fuel pumps for the larger V-8 engines. These typically use Walbro-type “weed-whacker” carburetors and a 12-volt pulse pump. These carburetors were designed for idle and full throttle and have some of the same deficiencies of model airplane carburetors.



Only a few builders have tackled automotive-type carburetors for miniature engines. One of these is pictured here. It's by Alan Ingersoll on a Wall Four flathead. It has a separate high speed and a low speed circuit.

Lee Root and Ron Bement are among the very few who have developed satisfactory fuel injection systems for miniature engine and they deserve great credit for that achievement.

Dick Pretel found that Peter Chinn's book, "Model Four Stroke Engines" is an excellent resource. The ISBN Number is: 0-91129504-6