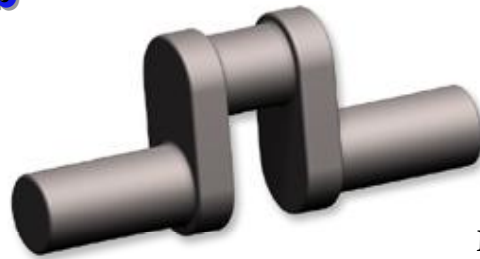


# Bay Area Engine Modelers Club

## The Crank Calls



March 2017

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### **MEMBERSHIP \$25.00 US**

Contact Paul Denham at  
pedenham@comcast.net  
**Membership Dues are now  
due!**

### **NEXT MEETING**

**March 18, 2017 at  
TechShop Midpeninsula  
2415 Bay Rd  
Redwood City, CA**

Doors open at 9:00 AM  
Meeting starts at 10:00 AM

### **Upcoming Events**

BAEM meetings: 3rd Saturday of the month

**SWAP meet at the March meeting!**

### **MEETING PLACE FOR March 18th**

We will meet this month at the TechShop Midpeninsula, 2415 Bay Rd, Redwood City, CA.

**DIRECTIONS:** Take the Woodside Rd exit on US 101 heading West, Make your 1st left onto Broadway, 1st Right onto Charter St, 1st left onto Bay Rd and a left into the TechShop parking lot.

### **MEETING NOTES**

February 18, 20176  
Bob Kradjian, Secretary

President Paul Denham called the meeting to order 23 seconds earlier than our usual 10:00am. We were privileged again to meet in the conference room of the Golden Gate Live Steamers.

**VISITORS:** Charley Reiter, a member of the GGLS and a prolific machinist visited along with his son, Alex.

Mike Gershowitz has been an active machinist for most of his life. Also a GGLS member and is most welcome to our meetings.

Enda Murphy is visiting us all the way from Nashville, Tennessee. You may recall that we teased his arrival in our last newsletter. He has had a long-

standing interest in building internal combustion engines but only recently had workshop space and is gearing up for a build. We await your photos of your build, Enda. Please keep us informed of your project and its progress.

Colm Murphy, Edna's brother, has just moved to the Bay Area in the last two weeks. He is a skilled fine woodworker and has worked with the Apple Corporation for 29 years.

Bryan and Cynthia O'Connor honored us with a visit.

Lou also visited and is chiefly interested in electrical devices, but appreciates the crossover to our internal combustion work.

**SWAP MEET:** We plan a follow-up swap meet for our meeting in March. We had a lively exchange of items at this meeting with satisfied looking members toting off a variety of goodies including a hefty desktop lathe.

**PROJECTOR PROJECT:** The 55-inch Sony smart TV that the club purchased was installed at the Golden Gate Live Steamers meeting room. The swing down mount was not needed, and the screen is now securely mounted to the wall above the white

board. Steve Hazelton offered to take over the project from this point forward. This will allow for videos and close ups of items on the front table to be shown in large scale on the video screen. Thanks to Steve! We always seem to have a member that will step up and meet a need.

**GROUP BUILD:** Several of our club members are joining with Steve Hazelton in a build of the Webster gas engine. Check out “Webster Engine Works” on line for details of this engine and interesting videos of other builders efforts. Aaron is also involved in building this very basic engine. Member Mike Stinmann from Sebastopol, finished this engine design some time ago and says it runs well. The plan is to have a number of these engines completed for the August WEME show. Steve was influenced by the example of our brother machinists in the Southern California club.

**FIRST POPS:** Dwight’s in-line four has run episodically, but is being stubborn today. Paul reports that the 12-volt booster fuel pump flamed out and required replacement. By the end of the meeting, it was sorted out and ran well.



**EVENTS:** There are no scheduled events.

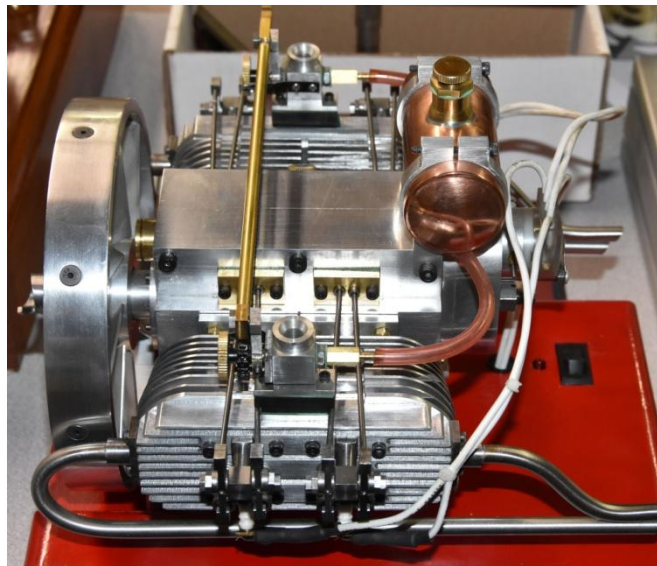
**TREASURER'S REPORT:** We are “good” and will be collecting dues for 2017.

**CLUB BADGES:** If you are a member in need a badge, contact Mike Rehmus (mrehmus@byvideo.com) who has offered to produce them.

## **BITS AND PIECES**

Joel Cohen showed us his very original approach to the venerable Kiwi single cylinder design. He doesn't like to work from castings and makes all of his engines from solid. One of his Kiwi designs ran very hot and quickly developed vapor lock. Isolation of the carburetor from the head with a temperature barrier made from a frying pan handle resolved that problem.

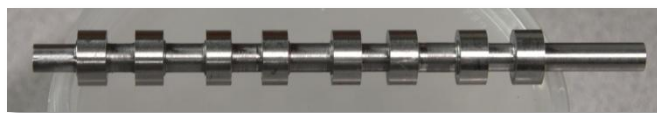
Next, he built a two-cylinder horizontally opposed version of the Kiwi.



His latest effort is a four-cylinder horizontally opposed variant of the original Kiwi single.

He is now working on a V-8 derived from the Seal Minor four-cylinder platform. Interestingly he plans to use two camshafts for this engine. His original Seal engine was built from castings and runs poorly because of a leak between the water jackets and the crankcase. Ah, those leaky castings! He then built another from solid that was far better. He uses conventional ignition for all these engines.

Joel is willing to share his plans with interested members.



The camshaft design is CAD derived, which allows for a great number of flat cuts. These closely follow the ideal pattern for the desired lobe. The final step is some careful filing and sanding. These cams are

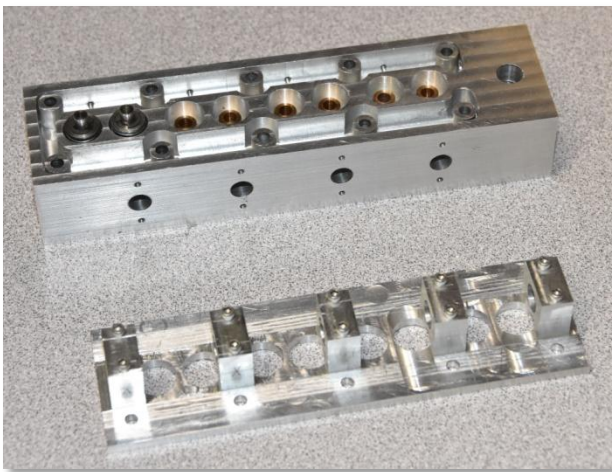
not hardened, but Joel does not plan to run these engines for other than a short time.

Edgar Westbury was the designer of the Seal and the Kiwi as well as a number of other engines. He was the eminent author and innovator in the UK for many years. His association with the author, Nevil Shute resulted in a novel: "Trustee from the Toolroom", published by William Heinemann, 1960. Nevil Shute is chiefly known for his dark novel, "On the Beach" but also was an energetic amateur machinist who was pictured working on a Sea Lion (a Westbury design, of course).



Peter Lawrence showed us his latest project, a Kozo Pennsylvania A3 switcher locomotive. He actually started it about 15 years ago and just returned to it recently. "Kozo" is Kozo Hiraoka who was honored by the Internet Craftsmanship Museum in Vista with a lifetime achievement award in 2005.

For some fabulous videos of a much larger A3 Switcher running at the GGLS facility, see "GGLS First run" on You Tube. This is the work of Kenrinc scaled up to 1.5" from 3/4" scale from Kozo's plans. It runs nicely and easily carries two persons.



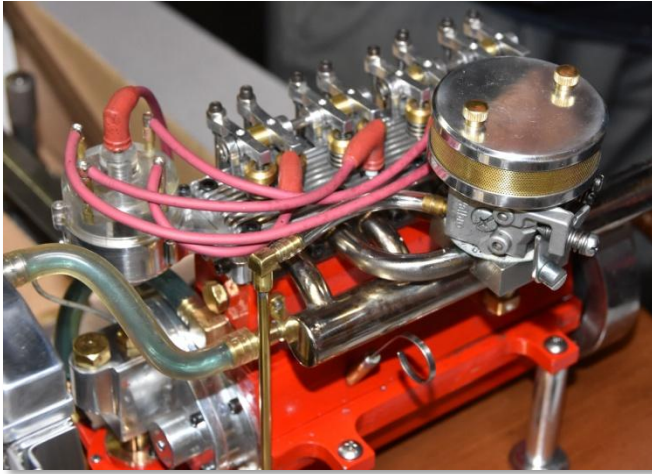
Peter spoke of his efforts to provide water-cooling for his Merlin prototype. Problems with Lock-tite setting up too quickly were related. One member

suggested chilling the receiving piece to retard the process.

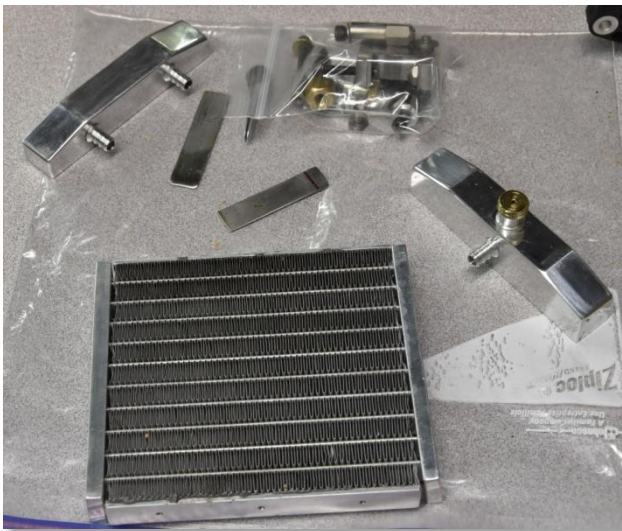


Peter was able to drill a 3/32" hole in his crankshaft to receive oil using a long split-point drill. He has also improved on the tiny 10-40 spark plug faults he previously experienced. Now, a thin tube of metal is spun onto a collar linking the base with the insulator.

Dwight Giles showed us the latest developments on his four-cylinder, much modified, Wall Four.



He used a dipper on the connecting rod cap to provide for crankcase lubrication instead of a more complicated oil pump arrangement. He also admitted that he forgot to include a crankcase vent. This resulted in the violent launching of the dipstick! That small matter has now been corrected.



He built another lovely radiator using his familiar epoxy technique. The “donor core” was from an Isuzu radiator. He gave us his technique for flaring soft aluminum tubes and other details of methods to build an effective radiator. JB Weld with a heat tolerance up to 540 degrees Fahrenheit was also used in several applications during the build.

Dwight chose the familiar Walbro carburetor for this engine. It is a diaphragm equipped unit that depends on the positive and negative crankcase

impulses of a two-stroke engine. With our four-cycle applications, the addition of a 12-volt “booster” type unit is commonly used. Amazingly, we have seen a number of engines that work well without such a pump. Recall that these carburetors are chiefly designed for hand-held applications, with mainly an idle and a full power setting. The elusive mid range is the weak point of most Walbro set-ups. One way to cheat this is to use two or three Walbros, and fit progressive linkages on the throttle bodies.

Dwight told us how he made his famous finger joint box corners. Issue 27 of “Wood” magazine features the plans for a finger joint fixture. It uses a 3/8” x 16 threaded rod to make a 1/16” kerf. Two turns followed by a cut, is the pattern. However, the saw must have a one-sixteenth kerf and that is not easy to find.

Another member used a 1/4” x 20 threaded rod and the kerf matched perfectly with his DeWalt saw, but it required four turns, instead of two.

Ray Fontaine told us about his new “toy”, a Flash Forge 3D printer. However, it’s not a cheap toy; it’s around 900 dollars. He purchased this to model an unusual oscillating engine that intrigued him, and the printer has allowed him to make a nice mock up model. The engine is far too complex to allow for a written description of its intricacies. The remarkable flexibility of the printing allows for parts that could not be easily machined.

In another application, his Jerry Howell ignition system came without a mounting bracket and he was able to easily print one. He uses Alibre for his software

Mike Rehmus also showed us his latest useful fixtures made with his 3D printer. Mike was able to locate a fine printer for \$400. There have been reports of very capable and well-built units for less than \$200! The Monoprice Select Mini 3D Printer for \$208 is a well-reviewed example. Stay tuned; with these falling prices, these units could become affordable tools for any one of us.

Mike’s very latest project is a two and a half watt laser cutter for making gaskets and doing engraving. The price is around \$225 from Banggood.com, the same item is over 450 dollars from Amazon. The

laser beam is not enclosed and will necessitate the use of protective glasses and precautions to protect visitors. The working area is 12 by 15 inches. The kerf is about seven thousandths. This should be easily capable of cutting 3 millimeter gaskets.

Anthony Rhodes reminds our members who publish articles, to also furnish follow up articles detailing the things that went wrong during the development of the item. This is essential information for the prospective builder. He furnished a current example from the British "Model Engineer" magazine.

Dwight Giles then made a remarkable offer to members. He will help them grind the camshaft for their multi-cylinder engine on his machine. Thank you, Dwight!



Paul Denham gave us the promised update on a high-powered ignition system for our larger multi-cylinder engine. This system was offered in "Everyday Practical Electronics" but originally published in "Silicon Chip Magazine". He has long been interested in an ignition that will not break down under high rpm and high compression applications. This is not a wimpy system and draws about four amps of direct current at 10,000 rpm. It uses a 60 kilohertz converter. He had just

completed this remarkable unit, and was able to demonstrate it to us at this meeting. It was definitely an impressive demonstration. We don't know if he made a pact with the Devil to make this device, but there was definitely a smell of ozone and perhaps some brimstone in the air. This is a capacitive unit that fires five to eight times at low rpm, but is capable of 1,000 sparks per second at high rpm. Paul had to wind his own coil and order a pc board from a vendor in Australia. Total cost for parts is around one hundred dollars. It requires a hefty 12-volt DC input.

The club book listed below was loaned last meeting. When finished, please return it at a meeting for another member to enjoy.

Power Pioneers: The Art of the Engine-  
Pre 1956, Vol. 1.  
ISBN 978-0-9981473-3-  
Publication date: 2015.  
Author: Ron Cairns

**For Sale by Mike Rehmus:**

Improved Turn-key 4-Axis TAIG CNC mill with high-end CNC controller, BobCAD CAD/CAM software and laptop computer. 707643-6396 or editor@modelenginebuilder.com