



hold equipment used for displaying at major shows, like the Good Guys event. BAEM member Tim Horn has kindly stored this trailer at his home. Tim is moving to China, so this storage space will no longer be available. The club needs to either find a new storage location or get rid of the trailer. President Paul Denham recommended we donate the trailer to GGLS, which is happy to accept the donation. Club members agreed. Paul will coordinate the transfer, and our excellent treasurer, Diedre Denham, will handle the DMV transfer paperwork.

Steve Hazelton will bring the trailer to the upcoming March 16 meeting. The club will be retaining the three air compressors for use at future shows. The remaining contents of the trailer will be given to club members who attend the meeting.

The club thanks Tim Horn for his generous donation of storage space for the trailer, over the course of the past ten or so years. We hope the move to China works out well for him.

## TRANSITIONS

Paul Denham noted, with sadness, the passing of BAEM member Bob Hettinger, as noted in last month's Crank Calls newsletter. Steve Hazelton is in touch with Bob's son-in-law, Jim, and is providing some assistance regarding the workshop-related aspects of Bob's estate. A "Celebration of Life" event is scheduled for May 25 in the Sacramento area where Bob lived. Steve will provide further details when they are known. Club members shared a few nice stories about Bob and his late wife.

## CLUB BADGES

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

## SHOWS AND EVENTS

Engine shows and similar events provide an opportunity for BAEM members to display their craftsmanship to an appreciative audience. They also serve to publicize our club's existence to potential future members, helping build our membership. It's also a lot of fun.

Your participation in upcoming shows is encouraged, and your help is needed to populate our display tables. You don't need an impressive collection of model engines to display. In fact, you can help

without anything at all to display, as we always need people to provide coverage.

## -STEAM Discovery Festival

Makerspace's 2024 STEAM Discovery Festival will be held on Saturday, April 20th, from 10am to 4pm at the Solano Community College, 4000 Suisun Valley Road, Fairfield, CA 94534. There is no charge for admission. This is like a smaller version of the Maker Faire, which is held in October.

<https://www.steamdiscoveryfestival.com/>

BAEM has been invited to display engines. We will attend. Steve Hazelton will be coordinating. Steve can be reached at 707-501-3535, and his email is [steve.hzlt@gmail.com](mailto:steve.hzlt@gmail.com).

Unfortunately, this event partially conflicts with our April 20 club meeting. A few folks will have to miss our meeting in order to provide morning coverage for our club's display at the event. Those attending the club meeting should consider planning on spending the balance of that Saturday at the BAEM booth at the Discovery Festival.

*[Note: "STEAM," as used here, is not referring to the product of boiling water. It stands for "Science, Technology, Engineering, Arts, & Mathematics."]*

## -GGLS Spring Meet and Open House

GGLS will have its Spring Meet and Open House on Saturday, June 13 and Sunday, June 14. We will be displaying our engines at this event.

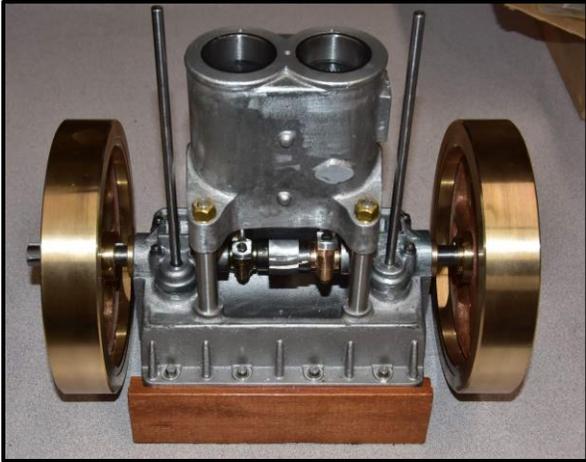
## FIRST POPS

No first pops at this meeting.

## BITS AND PIECES

Paul Denham showed significant progress on his Frisco Standard Twin. This is a model of a stationary gas engine manufactured by the Standard Gas Engine Company of San Francisco, CA, in the early 1900's. The 1/4 scale model was sold as a casting set by Pet Shelf Models, which is now out of business. Paul's set of castings, obtained by the persistence of his wife (the set was a birthday present from her), was missing a critical bearing cap casting. Mike Rehmus was able to 3D print a casting pattern for the missing part, and with the assistance of Dwight Giles, a replacement casting of aluminum was made.

Paul reported that the machining of the bearing cap castings was challenging, with little room for error. He fabricated the crankshaft from pieces that were silver-soldered together. At this point, the crankshaft turns smoothly within the bearing caps. There is a considerable amount of machining remaining.



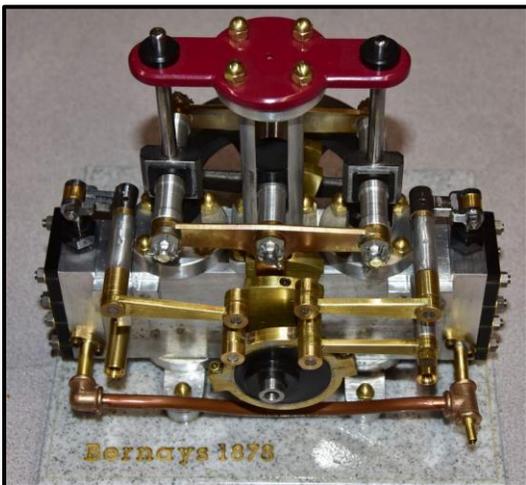
*Paul's Frisco Standard Twin, under construction.*

Article about Standard Gas Engine Company:  
<https://www.gasenginemagazine.com/gas-engines/frisco-standard-zmaz19fmzhur/>

A display model of a finished Frisco Standard Twin:

<https://craftsmanshipmuseum.com/exhibit/frisco-standard-1-4-scale-marine-engine/>

Paul also showed his completed Bernays steam engine, which he presented at last month's meeting.



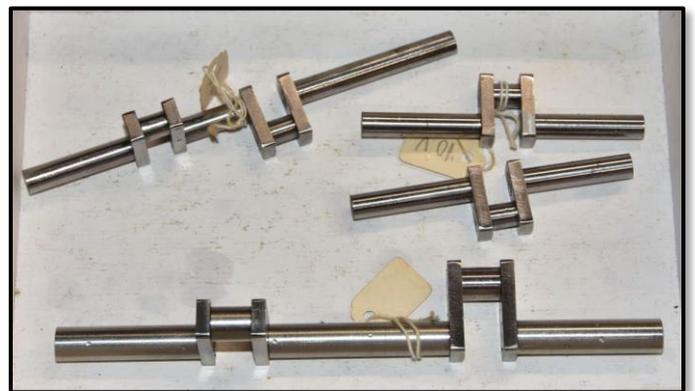
*Paul's Bernays 1898*

Charlie Reiter brought in a big hunk of solid brass, which had evidence of some preliminary machining by Charlie. This brass hunk, which had previously been a doorstop at Charlie's workplace, is now on its way to becoming a Bernays twin-cylinder steam engine. We look forward to hearing more about the progress of his build.



*Charlie's work in progress.*

Charlie evidently got inspired while making the Bernays crankshaft, which he assembled by using silver-solder to connect the parts. Having mastered the silver-soldering technique, he proceeded to fabricate several more crankshafts, intended for a variety of engines.



*Charlie's cranks.*

Charlie also showed a brightly-painted, two-cylinder steam engine that he designed and fabricated from a variety of sources. Charlie calls it "The Karen Engine." It is essentially a two-cylinder air-powered

wobbler-style engine fabricated from some unusual sources, such as the round cast iron base from an IKEA lamp.



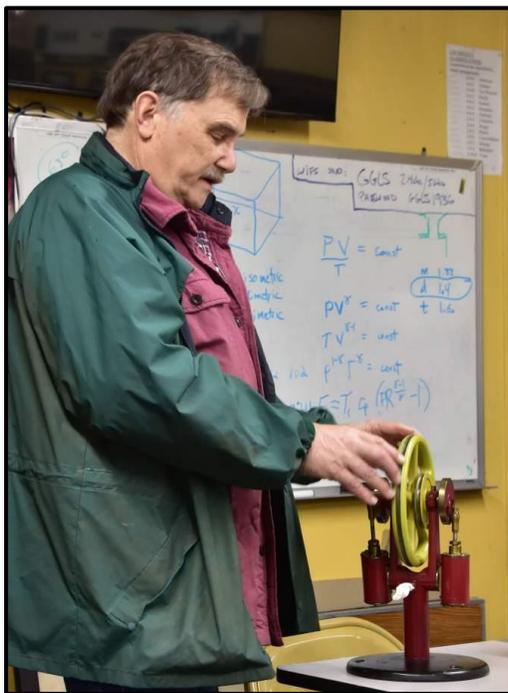
*The Karen Engine*



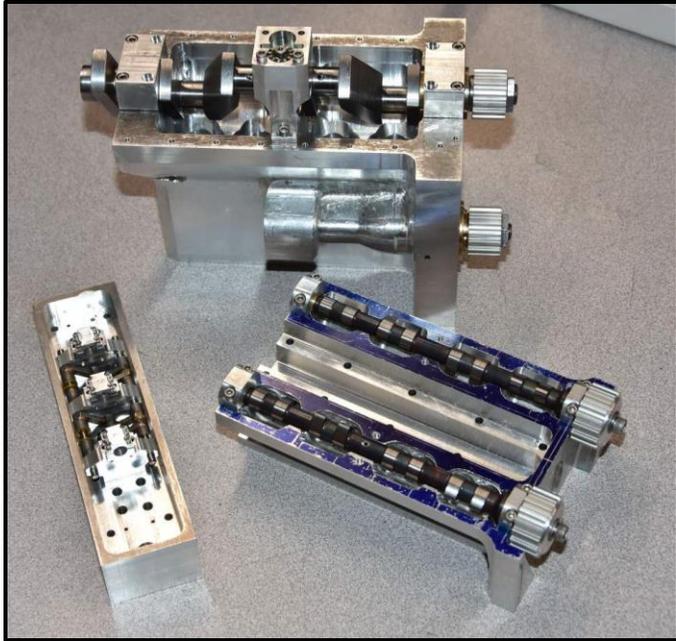
*Peter describing machining challenges.*

Peter Lawrence reported on the state of his cam-grinding efforts, seeking to grind the camshafts for his four-cylinder Merlin test engine. There was a discussion regarding choice of material for making cam shafts. The starting point is drill-rod of an appropriate diameter. Dwight Giles has made over 40 camshafts for various V8 engines. He favors 4130 chrome-moly steel, which requires the lobes be hardened first, then ground to the appropriate profile. The problem typically encountered is shaft curvature resulting from the heat-treating process.

Peter strongly favors using A-2 steel, which can be machined in its annealed state, the full-size cam lobes cut on the lathe. Then the lobes can be flame-heated, then rapidly air-cooled to harden them without hardening the surrounding metal, especially the shaft ends. The hardened lobes can then be ground to final profile. Peter uses a cubic boron-nitrate (“CBN”) grinding wheel, which can be found in the narrow width needed for grinding individual lobes of miniature camshafts.



*Charlie presents:  
The Karen Engine*



*Peter's engine work in progress.*

Another challenge Peter faced was drilling oil passages in the block of the Duesenberg engine that is another project. Careful drilling was required, especially when trying to meet two holes, each drilled halfway from opposite ends. Peter plans to ultimately test the oil passages by filling the oil pan with oil, fastening the pan to the engine block, then inverting the entire engine. Oil will drain from correctly drilled oil passages. Clever.

Larry Zurbrick described his success installing an inverter-style VFD (variable frequency drive) to convert single-phase to three-phase power for the motor driving his lathe. He had been using an older, rotary converter for this purpose. He found a VFD on Ebay for a mere \$80.

Dwight Giles brought in an interesting tool: a 10x pocket optical comparator, which is an optical device for measuring and inspection. It included several glass reticles for making a variety of measurements.

[https://en.wikipedia.org/wiki/Pocket\\_comparator](https://en.wikipedia.org/wiki/Pocket_comparator)



*Dwight's optical comparator*

## RAMBLINGS

Paul Denham displayed the plaque that had been presented to our club back in 2016, recognizing the BAEM club with a special lifetime achievement award for craftsmanship. It had been gathering dust somewhere in Paul's workshop. Paul felt it should be publicly displayed. It was unanimously agreed that the plaque should be hung on the wall of the GGLS clubhouse. Paul offered to immediately tackle the task of driving a nail into the wall but was thwarted by the lack of a hammer. "If I had a ham...mer," he lamented. This was echoed by a substantial number of the assembled group, singing the first few bars of the Peter, Paul and Mary song from the 1960's.

Well, you had to be there.



Working on an interesting project? Got a great BAEM story? Share it with us here. Send us pics and project details, and your hard work will be shared with the entire club.

## FOR SALE

Owner of several Elmer Wall model engines seeks someone to get them in running condition and to improve their appearance. Amount of compensation to be negotiated. Contact Jeff Richards via email: [eatapeach78@yahoo.com](mailto:eatapeach78@yahoo.com)

Got something you'd like to sell? Your ad is free and will be seen by likely customers.

## NEWSLETTER CONTRIBUTION

Your contributions to this newsletter are appreciated: workshop reports, tech articles, reviews, historical pieces, whatever. You contribute, we'll figure out how to post it. Send your contributions to either or both of us. Thanks!

-Mike Byrne at [mgbyrne3@comcast.net](mailto:mgbyrne3@comcast.net)

-Wes Wagon at [weswag@ix.netcom.com](mailto:weswag@ix.netcom.com)