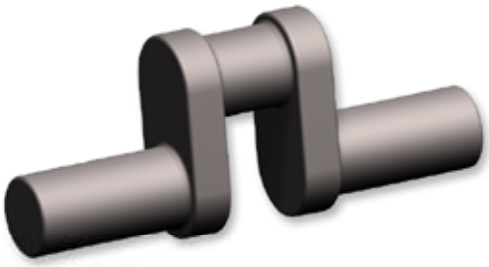
Bay Area Engine Modelers Club, Branch 57 of EDGE&TA

The Crank Calls



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May 2009

MEMBERSHIP
$25.00 US
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NEXT MEETING
May 16, 2009 at
Chabot College, building 1400
25555 Hesperian Blvd, Hayward 94545
Doors open at 9 AM
Meeting Starts at 10 AM

Upcoming Events
May 30, 31 /www.sturgeonsmill.com/
June 28 Palo Alto Concours
July 18-19 WEME in Vallejo

MEETING NOTES

Carl Wilson

Drew Keeth wrote a brief introduction on my clipboard and here it is: “My father, Lonnie Keeth, has been coming to BAEM for over a year and has built a Hoglet engine. I was interested in seeing what the club was all about. I’m an engineering graduate from Cal Poly and enjoy making things with my hands.” Welcome to BAEM, Drew, and thanks Lonnie for bringing him.

Photo by Karen Palmer

Quiet, meticulous, detail-oriented, knowledgeable, patient, helpful, wonderful friend; those are all words to describe Richard (Dick) Remington. A real nice guy. Born October 17, 1927 in Berkeley, CA, he grew up traveling around northern California and spending summers on his grandparents' farms in Ceres, California. He worked for Stanford Research Institute (SRI) from 1947 to 1992. Dick and his wife Bess lived in San Carlos and had two children.

At age twelve he built his first steam engine and that started a life long interest in model engineering. He enjoyed building Stirling cycle engines and fans as well as gas farm engines. He and Bess toured the U.S. attending farm and engine shows, talking to people and learning about their lives. He was a long-time member of BAEM and showed his models at Vallejo, Visalia, GEARS, Cottonwood and Tulare.

Dick died on Friday, April 17 from lung cancer. RIP dear friend. (Obituary by Shannon and Irene Lile.)

Carmin Adams has been ill recently: Bob Johnson suggested that members of BAEM call Carmin to cheer him up.

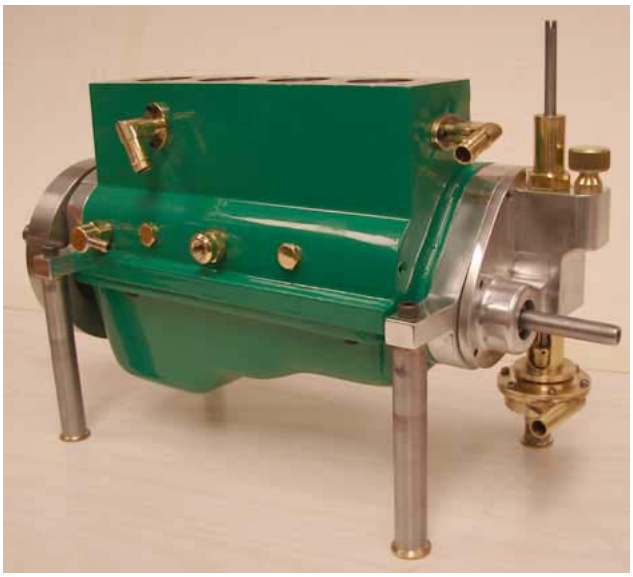
Don Jones (center) won the Young engine with a competition crushing bid of $2800. Flanking Don is Dwight Giles (right) who did the painting and George Gravatt who did the mechanical work and made the box. Not shown is Dennis Mead who made the nameplates. On behalf of BAEM members: thank you for the fine work. Also thanks to Ken Kelso for the donation of the engine. Someone in the back row said it best: Don bid to win. Congratulations!

Treasurer Ken Hurst reported that he paid dues to the Early Days Gas Engine and Tractor Association for 70 members leaving an account balance of $3100 in checking and $1800 in savings.

Ken went on to describe his recent vacation in Washington, DC and recommended some places to visit. His favorites: Aerospace museum (be sure to tour the rebuild area), the Smithsonian Museum (allow 5 - 7 days if you can), the Naval museum at Annapolis, and the Library of Congress.

Scott Overstreet continued this topic by suggesting the Coolspring Power Museum http://www.coolspringpowermuseum.org/ and the Rough and Tumble Engineers Historical Association http://www.roughandtumble.org/. Both of these organizations have extensive collections of antique gas engines and are located in Pennsylvania.

Dwight Giles had a bit of excitement recently: 25 minutes in a dual control P40 Kittyhawk. Dwight, a licensed pilot, made some of the parts for the restoration of this airplane and in turn was rewarded with some time on the controls. He was still smiling as he talked about its power and maneuverability. If you have a few dollars jingling in your pocket you can have a ride too. See: http://vintageaircraft.com/vap40.htm.



Dwight's contribution to Bits and Pieces was his 4 cylinder Black Widow. He showed the water pump at the February meeting and it is visible below the accessory gear case at the front (right side in this view) of the engine. Dwight is building an external oil pump. Other details that he mentioned are: the 1.062" pistons have 2 compression rings and one oil control ring. The rods are machined from 7075 aluminum; paint is alkyd enamel with hardener. Casting by the late John Vlavianos at de Vecchio Foundry in Stockton, CA. There are 3 sets of castings available but no plans on paper.

Len Higgins showed his nearly completed sheet metal roller at the February meeting and here it is finished. This is an "initial pinch" type: the two rollers at the front (input) side grip the sheet metal and push it against the deflecting roller (top right.) This roller is adjustable up and down for the radius of curvature imparted to the work and the roller and work can be removed from the frame by releasing the swing latches at the top. This facilitates the removal of a ring rolled more than 180 degrees. After the meeting I watched Len roll a nearly complete circle in a piece of 18 ga steel. The work was very round and the leading and trailing edge had a very small straight tangent. Very nice work on a capable design.

Month after month Peter Lawrence brings in new pieces for his scale model of the Merlin V-12 aero engine. The latest are the fork and blade connecting rods. Peter bored the wrist pin and crank journal holes in the steel blanks and used the fixture (at left) to mill the profile. There is a lot of detail, and care must be exerted to avoid mistakes and achieve a scale profile.

TECH TOPIC

Shortly before the 2008 Western Engine and Model Exhibition I assembled this small cam grinder and spent two days demonstrating it during the show. It was intended to demonstrate the principal of the rocking bar cam grinder: it will grind individual lobes to be assembled onto a shaft to make a cam, but it will not grind a "billet" cam. The workpiece is held in a collet in the Spin-Dex – there is no tailstock to support a lengthy cam. The finished cam lobe can be parted off from the stock in a second operation in the lathe.

The cam grinder uses a copying process which begins with the manufacture of a model lobe (left) by a toolmaker to the highest accuracy possible. The model lobe is identical to the desired cam lobe (right).

The master (center) which controls the grinding of the finished cam lobes is itself ground from the model lobe either on a special machine, or on the cam grinder with an attachment. Note that the master has little resemblance to the model lobe. It is not scaled up by a geometric factor such as "times 4." The process is essentially one of addition to grind the master and subtraction to grind the cam lobe. The exact shape of the master depends upon the geometry of the machine used to grind it and from this it follows that the geometry of the machine used to make the master must be

identical to the geometry of the machine used to grind the cam lobe.

The master in this machine is located at the left end of the Spin-Dex and the periphery of the master bears on a follower behind it (not visible.) The Spin-Dex is mounted on a set of bearings bolted to its base (also not visible); this construction allows it to oscillate about the center of its bearings. The Spin-Dex, master, and its spring constitute a cam and follower system and the motion of this system is imparted to the cam lobe being ground.

Sources:

1. The explanation of the addition process in the manufacture of the master is by Don A. Bell, "Master Cam Design," Strictly I.C., Vol. 7 # 41, Oct/Nov. 1994, p. 28
2. Roger Slocum pointed out that the actual profile of the master is slightly different from the simplified form proposed by Don Bell. (personal communication)
3. An excellent description of the rocking bar cam grinder is my write-up of Roger Slocum's Tech Topic presentation on cam grinding in "The Crank Calls, April 2005 , p. 3-4 http://www.baemclub.com/crkcallarchive/apr05nl.pdf
4. A simple grinder was described by Reg Wood: "Camshaft Grinding Machine", Strictly I.C., Vol. 1 #6, Dec/Jan. 1988/9, p. 12
5. A similar design with the addition of a workhead drive motor is at http://www.mysterelly.com/IMAGES/CamGrinder_Detail0037alg.jpg.
6. An older book, well worth the trouble to locate, is: Howard W. Dunbar, Cam Grinding and Cam Grinding Equipment, Norton Co.
7. The geometry of one cam grinder is at: http://www.profblairandassociates.com/GPB_4stHEAD_CamManufacture_Berco.html.

Many years ago Al Ingersoll made a cam grinder as part of his build of a model of a Curtiss V-12 engine. In the course of time this cam grinder came into my possession. It is surplus to my needs and I would like to pass it on to someone who can make use of it. It is an ingenious design incorporating automatic in-feed of the grinding wheel, but it does have significant mechanical and electrical problems. Talk to me at the May meeting.

Some NAMES Pictures