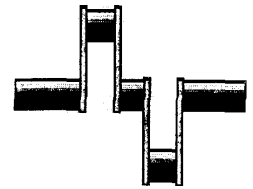


The Crank Calls

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



February 2002
www.baemclub.com

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NEXT MEETING
16 February, 2001
AT 10 PM
AT
Robert Schutz's SHOP
366 40th St.
Oakland, CA



On the Down Stroke.

All of those who have not paid their dues, this is the month to do it. That's if you want the next Crank Calls. I know it can slip your mind, so let's get those dues in the mail. You can mail them to Lew Throop at 27272 Byrne Park Lane, Los Altos Hills, CA 94022.

Correction on last page of the Jan issue of Crank Calls. The Monitor was by Bob Haagenson.

BAEM Meeting Notes

January 19, 2002

Bob Kradjian, secretary

The New Year kicked off in great form on January 19 with President Ken Hurst presiding over his first official meeting. I counted 78 attendees. Could this be a record? (We have 69 official and associate members on the books.)

The treasurer's report by Lew Throop reported \$1772 on hand, and memberships are still being renewed. Several of our regular members (not many) have failed to renew their membership. Please check to see that you are current.

We welcome our new members. Greg Hensley. Greg has an interest in CNC machining.

Mike Fenn of Santa Rosa, welcome to the club.

Gary Lowell was a visitor last time and a member this time. Welcome to Scott Dodd who joined BAEM in December.

New member John Meredith has very nearly finished a fine looking *Sea Lion*. These are not easy to build. I've promised to bring one to run at the next meeting.

And let us not forget everybody's friend, Bob Shores, who joined in December.

It was also good to see new member, Oscar Ortiz. Remember that he wrote a series of fine articles for S.I. C. Oscar, after attending the December meeting, commented that we seem to have a lot of fun. One of BAEM's guiding principles is to minimize long arguments, motions, seconding, and Robert's Rules of Order. We do want to maximize socializing, sharing information, and engine talk—in other words, have fun.

Visitor Howard Wood is from British Columbia and has an interest in woodworking as well as the usual metal shaving.

Shows: We are planning our usual list of fine auto shows this year. I doubt that we will surpass the 2001 total of nine shows though. They are tiring, time consuming, and a bunch of fun.

Any interest in a field trip to the United Motor Manufacturing facility in Fremont? I don't believe they produce engines there, however. Check out their web site at www.nummi.com.

Ken gave us a further report on the San Diego show at the *Snap On* facility. Member Bob Haagenson joined him in this effort. A later shop visit to Roger Butzen revealed some fifteen hit and miss engines in addition to his unbelievable blown, overhead valve, *Challenger*.

I must digress to make an observation. We have in our club four engines that are truly historic miniature engines. The term "world class" is sadly overused. This classification is here reserved for miniature engines that break new ground, are incredibly complex, and create remarkable challenges in manufacture. Few engines meet this set of standards. (A notable example is the V-12 Rolls-Royce *Merlin* built by Barry Hares of the UK.)

The engines in our club are truly world class. Two are still in progress and the third is Butzen's *Challenger* mentioned above. The others are Eugene Corl's one third scale, *cast-iron*, small block Chevy; Clen Tomlinson's (West Sussex, England) amazing *Deltic*, 18 cylinder, 1/8th scale, 2-cycle, opposed-piston, engine; and the last is Al Ingersoll's highly complex Curtiss-Wright V-12. There may be several more club engines that will make this list soon—keep tuned.

We could appropriately include John Palmer's two Wright engines, but———unfortunately, they are full-sized.

Newsletter editor, Jim Piazza, has arranged for the newsletter to be placed on the club web site (baemclub.com) in PDF file format. This would allow the newsletter to be transmitted electronically to our overseas members.

Jim's efforts on the newsletter and web site are both professional and highly appreciated.

Bits and Pieces:

Irv Stephenson brought in his Westbury *Sea Lion*. It is very close to completion. Of note, is the excellent, molded, distributor cap. A good job on a complex engine.

Al Vassalo brought in his remarkable, original, four cylinder, Stirling engine. This is the gem that won first place at the PRIME show. Al reports that an RV company is looking into producing his engine as a quiet, compact, power source.

Lew Throop showed his "Victorian" Jerry Howell Stirling. Howell's engines are all well thought out and nicely detailed. Lew is working on the latter stages of an English, single cylinder, *Witch*. Look for it soon.

Peter Brooks taught us how not to turn a crankshaft journal. He's back in the shop at last, having vanquished the termites. Again, thanks to Pete for his fine efforts in behalf of the club.

Ken Hurst brought the wooden patterns for a blower case and plates designed for the *Challenger*. It should be back from the foundry when you receive this newsletter. Ken plans a 90-degree crankshaft (like the Ford V-8) instead of the usual *Challenger* 180-degree shaft for his next one.

Dwight Giles showed an Atkinson (an 1880's engine) built 7 or 8 years ago. He modified the ignition to make it a reliable runner.

In addition, Dwight passed around his delicate oil control rings. These have a 45-degree bevel on the top and a half-depth 0.020" groove in the center. That makes for truly tiny drilling. He gave details of the tempering process, which he finds best at 1100 Degrees using a mandrel and stainless steel foil wrap over a broken matchstick. The late George Trimble specified 1400 degrees which Dwight feels is too much heat.

Chris Leggo showed a fixture for self-centering bars and rods. This was built from a *Model Engineer* article two years ago, and just was used for the first time.

I brought a static, partially cut-a-way engine bought on E-Bay. It is a remarkably detailed quarter-scale replica of a Dale Earnhardt—Richard Childress NASCAR Chevy engine. With 489 die-cast pieces, and a hand rotated crank, it's a real looker. Ken Hurst was motivated to surf the web and get one of his own.

Our large club banner (thanks, Bennett), formerly lost and lamented, is now back in the fold and will be proudly unfurled at the Hillsborough show May 5. A not-to-be-mentioned member's wife said: "What is this big thing in a cardboard tube?"

Rick Levesque shared his fine photos of PRIME. Mike Rehmus and Steve Jasik made the arduous trip to the Cabin Fever show. Steve reported that it was "wall to wall people." Our intrepid French member, Miguel de Rancogne made the trip all the way from Paris. Maybe we'll see some photos from Steve. I, for one, plan to buy Mike's upcoming video—it's a bunch cheaper than going in person, and he's offering a club special price.

New member, but a pioneer in the casting kit world, Joe Tochtrop provided an old *Air Trails* magazine (July, 1948) which tells the story of Ray Arden. Ray Arden was a true miniature engine pioneer, and a certifiable genius to boot. Born in 1890, he built a working 4-cycle single cylinder engine in 1907. The bore and stroke was 1.25 inch and the spark was of an unsatisfactory ignitor type. Arden decided to wind his own coil and create an ignition system. This worked well except at full throttle when it developed a high-speed miss. Arden proceeded to develop a glow plug to supplement, but not replace, the spark plug. His coil-winding ability was such that Glen Curtiss bought and used Arden's coils.

We all know that in 1947, after developing the *Atom* and the *Arden* engines, he revolutionized the miniature engine industry by re-introducing glow plugs. What we may not know was that it his experimenting with over 500 fuel formulas and countless plug windings that revealed the mystical catalytic relationship between platinum and methanol. Ray Arden, like George Luhrs, liked small engines. He developed an ignition single with a 1/8th inch bore in the mid-1940s.

Dick Pretel is exploring an ambitious project, which could provide a commercial source for *Challenger and the Wall* four parts. Valves, valve guides, tappets, cylinder liners, connecting rods, will be available. Think about this, if interested, place an order with Dick at the next meeting. Dick's source will make these parts available at his cost if the arrangement works out. (Remember that Roger Slocum already offers crankshafts and camshafts for both the *Challenger* and the *Wall*.) For the *Challenger*, a block casting is available from Cole's Power Models for about \$90.00.

Tech Topics:

Thanks to Rudy Pretti for several ingenious shop tips and an excellent presentation. I especially appreciated his tip on centering lathe work.

We have decided to make a "half hour" rule for all subsequent tech topics. (This was no reflection on Rudy, just a generic rule to keep the meeting moving briskly.) Scott Overstreet will provide details on Rudy's presentation. See you at the meeting.



TECH TOPICS

BY
SCOTT OVERSTREET

Rudy Pretti was our January speaker. When I was writing his advertisement for this column last month, I didn't have a topic headline for lack of being able to talk to Rudy. Now that I've heard his presentation, I think it would have been proper to advertise: "Shop Wisdom" by Rudy Pretti.

Very Thin Result Machining

Rudy's first subject was making a carburetor float from a solid brass billet. For brevity, I'll distill a well presented blow by blow "how to" to a couple of useful tips Rudy was using the float project to present: First, when you want to make a fairly long, very thin wall tube (or a small diameter pin) as an end result on the lathe; the way to do it is to make it in one pass (cut) from a heavy (strong) enough initial form using a free cutting small radius face cutting tool. Rudy suggested a tool point radius of two or three thousandths and about half that for a maximum feed rate. Rudy's float was 1 inch in diameter and the wall thickness was only 5 thousandths and showed no distortion.

Rudy's second float associated tip had to do with the making of the slightly domed ends for his float. Rudy's method: Using a parting tool ground slightly long on the tailstock side, part off a 0.010 wafer. Rudy says that it will naturally tulip or mushroom, sometimes potato chip like. If so, flatten via a squeeze in a mill vise - presto, a nice thin dome.

Tap Drills

Rudy's universal 75% thread tap drill formula:

$$\text{Nominal Thread OD} - \frac{1}{\text{Threads/inch}} = \text{Tap Drill Size}$$

$$\text{Example: } 3/8 \times 16 = 3/8 - 1/16 = 0.375 - 0.062 = 0.312$$

This is just what my tap drill chart suggests. Who needs this if you have a chart? You might; imagine you are designing an oddball diameter and/or pitch thread into a project. This will figure your diameters before single point threading in the lathe or drilling for a special tap that isn't in your chart.

I suppose that the reverse of this relationship works too; i.e., if you are starting with a known inside thread, add one over the thread pitch to the inside (hole) diameter to figure the nominal outside diameter to thread for a mating screw thread. Thanks Rudy.

Number Screw Sizes

Do you know how American screw sizes increment? — "Well — Yes — 2, 4, 6, 8, 10, and there are odds and smaller ones too." No, by diameter? "Well, no." — I didn't either.

Rudy says take a number 0 screw as being 0.060" diameter; then for each screw size larger, add the screw number times 0.013".

Example:

$$\text{The diameter of a 10-32 screw is: } 0.060" + 10 \times 0.013" = 0.190"$$

I tried this with a few "mil-spec" rolled thread stainless screws — it figures right on to just a few thousandths oversize which is probably the screw's fault. Thanks Rudy; another mystery answered.

4 Jaw Work Centering Tip

I imagine most of us homeshop machinists are familiar with indicating in a round surface on something in a 4 jaw chuck; but what do you do when there isn't a round surface; only a center punch mark. Well, maybe you open the jaws wide; push the work against the chuck with a center in the tailstock into the center punch spot and tighten up as "unmovingly" as possible — and take what you get.

Rudy has a much better way, and it is easy and precise. Put a dead center between the punch mark and the tailstock center and indicate on the center close to the punch mark. Take a look, all dead centers have a drilled center in their Morse end. Rudy suggests that you don't clamp the tailstock to the lathe ways until you

are pretty close to dead on as the compression loadings can get high as the work in the chuck is brought to center. Neat trick — Thanks Rudy.

Now, the amazing part is that Rudy presented all of the above in twelve and one half minutes; from kickoff to sit down. I don't know how he did it — I must have scared him by announcing our new one half hour or so limit for future Tech Topics presentations before he started. Rudy says that his February Tech Topics is going to be more of the same except different and longer. He says that he is planning to talk about things like the fine points of taping including how not to break a tap, leadscrew taping, chuck jaws, form tools and using your lathe as a tool and cutter grinder — and what else — only Rudy knows.

Scott

Cabin Fever 2002

by Mike Rehmus



Cabin Fever, held January 26 & 27th was the largest pure Model Engineering show I have attended. No matter the category, exhibitors, vendors, models, size of the halls, it is large. There were 2 large halls in which the exhibition was held, either one of which would have held NAMES and PRIME together. They were full of vendors and exhibitors.

Start of the show was a very small, running (briefly) Rolls Royce Merlin. When they get the minor details sorted out, this will be a prize-winner in any MICE contest.

The weather was amazingly warm and dry. On Sunday, the 27th, Scott Logan I were in shirtsleeves while we loaded his truck at 5 PM. Shortly thereafter,

Mother Nature corrected her oversight and it became more like any normal mid-Pennsylvania Winter.

If you can at all arrange to attend an exhibition next year, this is the one I would chose. It cost slightly less than a trip to NAMES and the environment, in the midst of the Pennsylvania Amish countryside is pretty, friendly, and relatively inexpensive.

Note Ed. Mike has shot videos of the show. If you are interested contact Mike Rehmus. www.byvideos.com

Parts Parts Parts

Several of the members have decided to have parts CNC machined that will fit Wall, Challenger and other engines. There will be a single production run. If you have an interest see Dick Pretel or Steve Myers for particulars at the next meeting. This is a great opportunity to help speed along your next multi cylinder project, so act now before it's too late.

Roger Slocum still has some cranks and cams for the Wall Four. For those of you that are thinking about the Challenger V-8, Roger will make cranks if there is enough interest. Roger also has a Holt crank and cam in stock. Once these are gone that's the end of the run for the Holt. See Roger at the next meeting or give him a call at 408-866-6243.

Dave McMillen will be making more 1 inch pistons. Rods for the Challenger will be ready later this year. Contact Paul Bennett or Dick Pretel at the next meeting.



Westbury Sea Lions.



Al Vassallo's 4 cylinder Stirling.



Peter Brooks's Cranks



Ken Hurst's blower housing patterns



Dwight Giles oil ring.



Dwight Giles Atkinson Cycle engine.



Chris Leggo's centering fixture.



Bob Kradjian's V-8 display engine.



Low Throop's Victorian Stirling engine.



Ken Hurst's Chihuahua teaching Bob some new tricks



Marc Cave's unique engine project.



George Gravatt and his J & E junior.