The Comets' Tale

The Official Newsletter of the

August 2009

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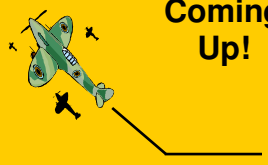
The Comets' Tale is the official newsletter and record of the Ventura County Comets, AMA Chartered Club #173 and is published monthly at the Comets' Tale Plaza, somewhere in Ventura.

Editorial contributions are welcome.

Next Meeting: Thursday, 20 August, 7:30 PM at the Oak View Community Center



Coming Up!

22-23 August
Wings Over Camarillo Event

29-30 August
SBRCM Float Fly at Lake Cachuma

19 September
Big RC Swap meet at Condors field in Camarillo – open flying

1st Sunday of Each Month
Open House at Santa Paula Airport

ROOT'S RAMBLING

The Curtiss company developed the fastest airplanes in the world in the early 1920's. In 1922 and early in 1923 the Army raised the world speed record from 202 mph to 240 mph utilizing their Curtiss CR-2 racers. The R2C-1 first flown in September of 1924 (picture 1) was an orderly improvement with somewhat greater length and wing span, but less weight, better streamlining, and a special version of the Curtiss D-12 engine. Two of these planes were built for the Navy and just 4 weeks after first flight Ensign Al Williams won the prestigious Pulitzer race (in front of a crowd of 100,000) with one of them at a new record of almost 244 mph. On November 2, Al Williams and Navy Lt. Harold Brow were ready to

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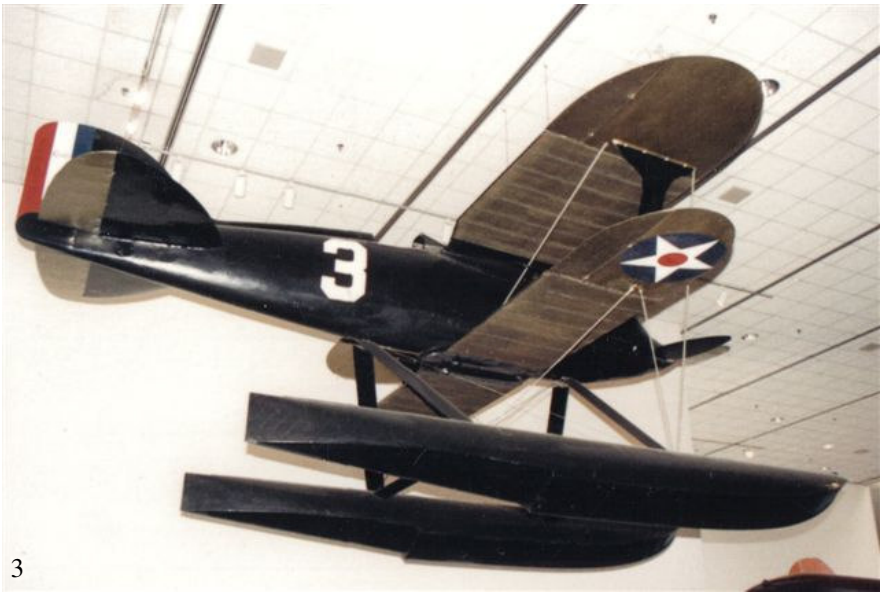
try to break the absolute world speed record. Having proven themselves the very fastest (especially faster than any Army pilots), they had only each other to beat.

The record required two dashes in either direction at no more than 165 feet altitude. At the end of the day Williams had raised the record speed from 239.95 mph to 259.15 mph. Two days later Brow made his four high-speed passes over the 2.86 mile course at a speed of 265.59 mph. In the last attempt of the day Williams raised the record to 266.59 mph. Later, the Navy formally discouraged further record attempts on the grounds that the limit of human endurance had been reached and further speed increases might have fatal consequences!

This R2C-1 crashed within a year while being piloted by army pilot Alex Pearson. The second one was converted to the R2C-2 floatplane by the addition of massive twin pontoons (picture 2) and readied for the 1924 Schneider Cup Race. But this race was cancelled due to lack of entries. It crashed the following year in the Potomac River.



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This discussion now gets us to 1925 when the Curtiss racers had their best year. I became interested in this next generation of racers (designated R3C) after seeing a 1/3 scale model R3C-2 on floats where it won the 1991 Lake Havasu Schneider Cup Reenactment. The original R3C-2 airplane is now in the Smithsonian Air Museum in Washington D.C. (picture 3). The model event consisted of large scale Schneider Cup R/C models judged on scale appearance and scale flight. They were flown around a pylon course at scale speed, the early Schneider race mod-

els flying slow and the later ones much faster. The full scale Schneider racer speeds grew from approximately 70 mph in 1913 to 400 mph in 1931.

Butting heads had proven both expensive and embarrassing, so in 1925 the Army and Navy temporarily shelved their rivalry and agreed to go in together on four Curtiss planes designated R3C-1's. One static-test airplane was jointly funded, but the three racers were ordered on a Navy contract.

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The Navy's blue and gold and the Army's black and gold R3C-1 racers were entered in the 1925 Pulitzer race. Army Lt. Cyrus K. Bettis won at a speed of 248.9 mph (picture 4). It was then fitted with streamlined single-step wooden floats and redesignated the R3C-2. Two weeks after the Pulitzer race it won the Schneider Cup Race, piloted by Army Lt. James H. Jimmy Doolitttle (picture 5). The next day, Doolitttle flew the R3C-2 over a straight course at a world record speed of 245.7 mph. The Italians won the Schneider Race in 1926 at a speed of 246.4 with a new monoplane. This speed was faster than the world straight away speed record from the year before. 1926 was the last year the U.S. military supported racing, and the biplane configuration never won again.

Next month I will try to describe my ¼ scale Curtiss R3C-1 model (picture 6) and how it was built.

Bob Root

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July 2009 Minutes

The Comet meeting was called to order by President Mike Ambarian on July 16, at 7:30 PM, at the Oak View Community Center. The June minutes were approved. We had 2 guests, Richard and Theresa and no new members.

Treasurer's Report: We have 89 members and finances are in good shape. The report was approved.
Field Marshall/Safety Officer: No report
Park Liaison: Ken Marsh reported that members no longer need to have him tell the Park office when you are planning to camp at the field. You will however, need to make sure you have your membership card on hand to prove to a Ranger that you have a right to be camping at the field.

Old Business:
Marilyn Nash reported on a meeting she, Dale Nash and John Dugan had with Lake officials in reference to the various fees charged during the last Float Fly. The Club and Lake have agreed to a firm price for the October Float Fly of $25 for camping, $12 for extra cars and a $10 day use. These prices are the same as after season rates. Lake fees for Easter thru Labor Day are $30 for camping and $15 for day use.

Mike Ambarian has received a bid from the company who paved the Condors field. The company is local from Santa Paula and feels the field can be resurfaced by repaving. They will need 3 to 4 days for prep work, can fill the cracks, take off all loose material, apply fog stuff to damaged area, fix swells, reseal, and restripe. Mike will be working on getting a written guarantee and see if they can reduce the cost of $6,150. No date is set yet as to when the field will be redone but members will be notified when this happens as it will be closed for one week.
Mike questioned as to what the paving company could do about the entrance road to the field and was given a cost of $15,850. This is not possible for the club and would also hold the club responsible for any liabilities that may occur on the road. No go.

New Business:
The War Bird fly will be July 26th and a $10 fee includes lunch, once again cooked by Mike and Steve Steinmetz. Thank you guys! It was suggested salad also be added and a fee for lunch only, cost TBD.

Bob Root reminded all of the upcoming Ventura County Fair and the possibility of giving visibility to 40,000 people of the flying sport by entering a plane at the Hobby building July 31 and August 1. Bob suggested bringing webbing straps to hang the plane from the ceiling supports, which each holds approximately 15 pounds. Fair personnel will hang them for you.

It was reported the Murray Cooper is having hip surgery July 22 in Desert Hot Springs.

Emery Balasa reported that he had talked to John Gates, happily living in Arizona. John now owns a tractor, a burro and a horse and is learning how to brand. He is also building an airfield on his property.

Ron Scott showed a silver, bubble wrap, insulation material called Reflectex. From it he has created large envelopes which he uses as wing protectors. The material comes in 5 foot rolls selling for approximately $25 and can be found at Home Depot and Lowes.

Model of the Month:
We had two Model of the Month entries:
Joe Horswell brought in an electric plane, weighing about 3.5 pounds, which he converted to glow.

Bob Root brought in a Curtiss biplane Model R3C-1 originally built in 1925 (the real thing – not Bob's). Bob started with plans and, with changes and additions, completed the model in one and a half years. The plane weighs 17 pounds, has 1,800 square inches of wing area, 66 inch top wing span, has wing radiators and uses a Hi-Tec radio and a Saito engine. The foam wing is covered with balsa and fiberglass and finished with an epoxy covering. Bob will convert to a float version in the future.

The judges decided Bob won the model of the month.

The raffle was held and the meeting was adjourned at 8:20.

Respectfully Submitted,
Sandy Brown

Ace R/C 4-120 (built from kit) $160.

Span=86 in. Wing Area=1430 sq. in. Weight = 15 lb. Length = 68 in.
Super Tigre 3000 engine DAD PRO heavy duty servos Receiver ready
Plane has about 50 flights. Contact Bob Root 805-648-7293

From the Anoka County Radio Control Club, Coon Rapids, Minnesota

Better Performance with Less Noise

by Brian Dorff

With the ongoing debate about the noise our little engines produce, much is being done to preserve our way of life while respecting the rights of others. At first, noise reduction sounds bad for pilots. We think that reduced noise means reduced power, and conventional wisdom supports this. It is not until you fully understand how engines and propellers operate that you will realize the gains that benefit not only our neighbors but our airplanes as well!

There are four contributors to the noise made by models (in no specific order): muffler type, engine speed (rpm), tip speed of the propeller, and vibration.

Muffler

The mufflers provided with today's engines are quite good for the rpm range in which they are designed to run. Mufflers that come with internal baffles should keep the baffles in. Removing them does nothing to boost power, it increases noise, and makes the engine idle poorly because of lack of back pressure. Pitts-style mufflers shouldn't have more exit area than the stock muffler does, and if it does, one of the ports may have to be partially or completely blocked. Again, this will help idle.

Engine speed

A large contributor of noise made by airplanes is an over-revving engine. Most modelers try to make their engines run as fast as possible, trying to obtain the rpm at which the manufacturer claims the largest brake-horsepower (BHP) number. What they don't realize is the peak efficiency for the engine occurs at peak torque, which is usually about 65%-75% of the peak BHP rpm.

Example 1: A manufacturer of a .46 engine claims 1.5 BHP at 16,000 rpm. After break-in you find that you can turn a 10 x 5 propeller at 15,500 rpm—very close to the peak BHP, but the airplane's performance is mediocre, it is loud, and consumes way too much fuel.

Now you find the engine's peak torque is about 70% of the peak BHP rpm (.70 x 16,000 rpm = 11,200 rpm). You switch to an 11 x 7 propeller and find that the rpm is 11,500. You are much closer to peak torque now, and the airplane flies better and is quieter because the frequency of the engine firing has reduced dramatically. The fuel also lasts longer, and the engine will last longer as well since it is not working as hard. A slower engine also helps in achieving the next goal …

Propeller Tip Speed

The tip speed of the propeller is critical in quieting the airplane. The point where things get noisy is 560-feet per second or about 380 mph. Going more than 400 mph is a big no-no. Even in an airplane that is built for speed, you should be able to choose a quiet propeller.

Example 2: Same setup as the last example, the 10 x 5 propeller is at 15,500 rpm and the 11 x 7 propeller is at 11,500 rpm. The formula for tip speed in miles per hour is: (Diameter in inches)(3.1416)(rpm)/1056. The number 1056 is a constant that converts inches per minute to miles per hour. A 10 x 5 has a tip-speed of 461 mph (a no-no). (10)(3.416)(15500)/1056 = 461.

We want our tip speeds no faster than 400 mph and it should be less than 380 mph if you want to keep your flying site. The 11 x 7 at 11,500 rpm has a tip-speed of 376 mph. (11)(3.1416)(11500)/ 1056 = 376. The tip speed is now down to a moderate level. But how do these propellers compare in performance? You can calculate airspeed by using the propeller pitch and the rpm of the propeller. The pitch of a propeller is the second number in the propeller designation. This is the distance in inches that the propeller will travel through the air in one revolution.

Multiplying the pitch by the rpm and dividing by 1056 will give the calculated speed of the model. 5 x 15,500/1056 = 73 mph; 7 x 11,500/1056 = 76 mph.

So your airplane will actually be traveling slightly faster with the 11 x 7 than with the 10 x 5, while turning 4,000 rpm slower. This reduces engine noise, propeller noise, fuel consumption, wear and tear on the engine, etc., without compromising performance.

Propeller Loading Factor (PLF)

How do you know what to expect switching propellers? Being able to compare propellers before you run them is the key to optimizing your airplane's performance and getting rid of the noise. Say you are happy with the rpm that your engine is turning with the 11 x 7 propeller, but you want to try other propellers to see what you like best for flight performance.

Right now you are at the middle of the road, slightly fast and passable vertical performance, but what if you want more vertical? First we solve the PLF of our existing propeller, and then we compare it to others. PLF=D x D x P (D=diameter, P=pitch)

The 11 x 7s PLF would be 11 x 11 x 7= 847 PFL (compared with the 10 x 5s or l0 x l0 x 5=500 PLF). Now let's see what else is out there. To increase vertical you should either increase diameter, decrease pitch, or both.

To keep a PLF close to the same you will have to do both. If you are trying to raise the rpm, decrease pitch—and if you are trying to slow the motor, increase diameter. I would try the 12 x 6 first and then the 13 x 5. They have close PLFs. This is for comparison only. Switching propeller brands or not balancing a propeller, among other things, can vary your results.

Vibration

How does the vibration of your model relate to the sound it makes in the air? Well, sound is vibration. Imagine your beautiful model—a nice wooden structure covered in drum-tight plastic covering. Think of it as a percussion instrument. The piston is traveling up and down like a drumstick pounding away at your model. And your model echoes every stroke it makes. The same thing happens with an out-of-balance propeller. Noise. It's everywhere! Your new mission: get rid of all vibration.

Start at the Propeller

It moves 300+ mph at the tip—balance it! It will remove noise because all that vibration won't exist in your airframe. Our neighbors will thank you and your receiver crystal, your servo pots, fuel tank, and NiCads will thank you as well. You will be rewarded with much greater reliability and a longer airframe life span. Also consider a high-quality spinner. They are better balanced and look nicer.

Back to the other cause of vibration—the engine. It is not possible to balance an engine dynamically at all speeds, so some vibration will forever be present, especially with four-strokes. The only thing that you can do about it is to isolate the vibration from the aircraft, making less noise in the process. Iso-mounts vary in type and price; from rubber grommets between the firewall and the mount, to specialized mounts for specific engines and airplanes that cost $100 or more. A popular one is made by Dubro and is for any 40-90-size 2 cycle or 4 cycle engine. It sells for $20-$30. Well worth the investment!

While it may not be feasible to make every one of these criteria work on your aircraft, it is important to keep these points in mind when getting your airplane ready to fly. If we all do a little, we can make a big difference. Remember, a 3 dBA difference in sound and the intensity doubles. If you can make your airplane even 3 dBA quieter, you have made a huge cut in the noise that everyone around us has to hear. (Although the sound energy is halved for every 3 dBA drop, it takes a 10 dBA drop for the human ear to perceive the sound being half as loud. A 10 dBA drop results in one-tenth the original sound energy.) ✈

Camping Rates for the October 17 and 18
Float Fly at Lake Casitas

We discovered that there were some discrepancies in the amounts paid at our April Float Fly for camping and entrance fees into Lake Casitas. After talking to the park management, they have established the rates for the October event.

All camping will be $25 per night.
Extra cars (joining a camper) $12 per night.
Park day use fees will be $10.

Hope to see you all in October
Marilyn Nash

Errata: We got Bob Root's email address wrong on the roster last month. The correct email address is **bobroot@charter.net**

We also have Emery Balasa's phone number wrong. The correct number is **(805) 794-7946**

ON THE SAFE SIDE

101 Ways to Stop a Spinning Propeller

by Don Nix, Insider Safety Column Editor

Unfortunately, we are limited to only a single safe one: Stopping the engine.

Yeah, yeah. Everyone knows that. Right? Well, if so, then why are more than half of all model accidents caused by model propellers—while turning? Because we do very stupid things sometimes. Because we get careless. Because we get too casual. Because we are inexperienced. Because we are so experienced we think common sense safety is for beginners. Because, because, because.

Well, that be the cause!

K&B engines might not be very familiar to newcomers to the hobby, but oldsters will remember that K&B was the leading American manufacturer of model engines for decades, having been started by Johnny Brodbeck back in 1946. About 20 years ago, I was flying at the pilot's station next to one occupied by my good friend, John Brodbeck; the "B" of K&B engines, and son of Johnny, the founder. John was test flying an engine sent in by a customer seeking a solution to a puzzling problem. (Yes, company owners really used to do such things.) John had made a couple of laps around the field, but felt the engine was too lean, so he landed and taxied to the front of the pit to change the needle setting.

Now here's a fellow who is the owner of a model engine company, who had probably been weaned from Mama Brodbeck to a baby bottle filled with glow fuel, and had been around and using model engines since the earth cooled. One would think he would be extra careful; be sure the model was secure and tune the engine from behind. Instead, wanting to get on with the test, he reached across the propeller from the front. I can tell you it stopped the engine. However, flying was over for the day for both of us because I had to drive him to the emergency room to have a deep 3-inch gash in his forearm neatly stitched.

Yes, he was hurt, but said the worst pain was the embarrassment of being an engine manufacturer who would do such a dumb stunt (his words, not mine) at Southern California's busiest flying field in front of about 60 modelers.

My guess is, there are very few modelers who have been flying more than a couple of years who have not donated a little blood and possibly flesh to carelessness with propellers. For some of us, once is enough. Others have a little slower learning curve. It would be bad enough if their carelessness just injured themselves, but all too frequently an innocent person is hurt; sometimes more than just stitches.

I think I'll cut this column shorter than I had planned to allow you faithful readers (all six) to submit some of your own experiences that might quite possibly make others think twice before doing something stu … er, ill-advised.

Always glad to hear from you: flyerdon@aol.com or flyerdon@ yahoo.com. You will get a reply.