

# M.A.R.C.S. SPARKS

Monthly Newsletter of the Madison Area Radio Control Society  
Madison, Wisconsin AMA Charter #665

Volume 43 - October 2004 - Issue 10

## *Come Fly With Us*

MARCS meetings are held on the first Thursday of every month at 7:00 P.M. in Room 201B of the Madison Labor Temple, 1602 S. Park St. in Madison. Visitors are always welcome. We think we have a great hobby and we invite you to come and see and consider joining us.

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Contribution of articles for publication is encouraged.

**Deadline for publication is the 20<sup>th</sup> of the month.**

## Minutes of the September 2, 2004 Meeting

Not received in time for publication.

### **Philosophy 101**

If he can remember so many jokes  
With all the details that mold them,  
Why can't he remember, with equal skill,  
All the times he's told them.

### **Correction**

The Fw-190 D from the scale rally that was pictured in last month's Sparks was flown by Chris Spierings, but was built and owned by Harley Nelson.

### **MARCS Board 2005 Dues**

#### **Recommendation**

*By Vince Streif, President*

After much discussion, the MARCS Board has agreed on a recommendation for our dues for 2005. This is only a recommendation and will need to be voted on by the membership at the November meeting, which will also be the election of officers and board members for the coming year. Please let us know how you feel and come to the meeting and vote. As an incentive for coming to the November meeting, we will be raffling off a Hitec flight pack generously donated by Hobby Horse.

The Board's recommendation is that dues remain unchanged, but that anyone who wishes to receive a printed copy of SPARKS in the mail (as opposed to the electronic edition) will be assessed a \$10 surcharge to cover the additional costs to the club. Last year, the membership expressed its will that "pay-as-you-go" should be our official fiscal policy. This plan allows us to recoup the costs of producing the newsletter and, we hope, end the erosion of the club bank accounts. Over the last few years, our balance has eroded slightly – not a large amount, but an ongoing trend. To stop this, we want to reduce the cost of producing the newsletter or to recover its cost where it cannot be reduced. I believe that MARCS is an excellent value, and we want

to ensure that it remains financially healthy.

Thanks,

## MARCS Needs a New Webmaster

*By Vince Streif, President*

It is with regret that I have to tell you that Chris Spierings is retiring as the MARCS Webmaster. Chris has done a great job picking up the reins after our previous webmaster left, but he now feels that he also needs to devote his time to other pursuits.

The primary duties of this position are to maintain and update our website, and serve as a point of contact with our ISP (Internet Service Provider). This person also needs to check the e-mail on a regular basis to either answer requests which are sent to the website or to pass them on to someone else for a response.

The required knowledge is a familiarity with FTP and HTML. They should also be knowledgeable about MARCS so they can figure out who can best handle some of the requests. Certainly experience with administering websites would be a bonus.

The benefits (besides the love and adoration of your fellow members J) include a paid MARCS membership for the year.

Any volunteers can contact me, Vince Streif at [streif1@charter.net](mailto:streif1@charter.net).

## November is Election Month Candidates Needed

Vince Streif is not seeking reelection as President and Mike Pirkel finds that he must resign his board seat, on which one year remains and will need to be filled, in addition to the three board seats that normally must be refilled. Volunteers, as usual, are badly needed. Please contact Ed McDonald ([edgarnmcdonald@msn.com](mailto:edgarnmcdonald@msn.com) - 249-0734) or Tom Lazar ([tdlazar@yahoo.com](mailto:tdlazar@yahoo.com) - 655-3396) to offer your services.

The election can't be held if we don't have a quorum and there hasn't been that number of people at several recent meetings, so it is with great appreciation that **Hobby Horse has donated a Hi-tec radio system** for a raffle at that meeting in hope of stimulating attendance. You have to be present to win, so cmon down!

## Apology to Schultz Sport and Hobby

*By Vince Streif, President*

We've had occasional problems in converting from the hardcopy newsletter to the new electronic form. Jerry has done an excellent job and we all owe him a great deal of thanks for his tireless efforts, but accidents do happen. Unfortunately, Charlie Schultz's ad was missing from a recent original mailing of the electronic version and had to be sent later. This is especially unfortunate because of his many actions as a benefactor of MARCS over the years. Charlie, I just wish to extend my humble apologies in this public forum and promise that we will try even harder to prevent it from ever happening again.

Thanks for being understanding and for all your help.

*Editor's Note: Me too! Sorry, Charlie.*

## Electric Fun Fly Report

*By Dave Rush*

The weather was beautiful for the event. It started a little brisk at 50 degrees but ended up close to 70 by mid day. The wind cooperated, although not coming from the forecasted direction of NNW. Actually, the wind couldn't really make up its mind and except for a couple of times it swung to the south and reminded us that we were next to a land fill - it wasn't a concern!

The transmitter impound was manned by **Jim Lacy, Bill Kinney, Lois Weber** and **Wayne Lanphear**. Thank you to them! The food area was handled by **my wife Jodie and son Matt**. I may be biased, but the food was awesome!

Thanks to my early morning helpers with set-up. **Tom Alff, Greg Sutter, Greg Baer, Don Weigt, Wendell Hottman** and **Pete Aarsvold**. Special thanks to **Wendell** for the use of his generator and the gas to run it. If you weren't next to it, you probably didn't even know it was running, which helped maintain the quiet nature of our event. Thank you to **Pete** for CD'ing the event. Thanks to **Chris Spearings** for letting me use his warbird handout to prepare mine - saved me lots of time! Thanks to **Greg Sutter** for the group picture and **Tom Alff** for aerial shots from his slow stick. Tom even caught what I think is **Charlie Weber's Rare Bear** in flight below him!

At about 10:00 I was getting a bit nervous as we only had 17 pilots. I just attributed that to changing the date so many times. Silly Me! We ended up with 35

registered pilots from all over the State (Fond du Lac, Wausau, LaCrosse, Suburban Milwaukee, Janesville, Blue Mounds and others) as well as one all the way down from Lakeville, MN.

There was a wide array of planes from foam to ARF's to scratch built. I think the heaviest I was told was an 8 1/2 lb. Cub and the lightest was under an ounce! I think the 6 engine B-36 was my favorite, what an impressive sound! Unfortunately, it participated in the only midair of the day. It only lost its nose, the other plane didn't fair as well. The crowd favorite was the scratch built C-130. Pete's controllable parachutist was also a big hit with the crowd.

At 10:30 we did a candy drop for the kid spectators. Pete took up 7 paracutists with a piece of candy rubberbanded to them in his Cargo with bomb bay door. It was a hit for the kids and their parents. A group picture was taken at 12:30 and is posted on the MARCS website. You can also see the wide array of planes here.

The pilot raffle was held at 1:30 and thru the generosity of our sponsors every pilot that was still there walked away with a prize. Right after the picture, we had ZAGI combat - no streamers, just knock your opponent out of the sky. It ended with one Zagi left flying!

We shut down the transmitter impound at 3:00 as the piston people were getting anxious to fly!

Thanks to all that helped tear everything down. A HUGE THANKS to our sponsors: **Batteries America, Dockter's Hobby World, Flitter Wings, Hobby Horse, RC Performance and Hobbies, Schultz Sport N' Hobby, Foamy Factory, and Castle Creations.**

Thanks again to all helpers, even those I forgot to mention!

## Scale Rally Report Follow-up

*By Don Weigt*

Mea culpa! Senior moment?

I knew I'd forget somebody who helped with this year's Ken Kindschi Memorial Scale Rally. Sure enough! I did....

The first guy out to help Sunday morning was Harley Nelson. He grabbed a hammer and signs and went to work. Also tried to close the gates to the loop around the scale house. Probably did a lot more too but I overlooked him in making up the list of people who helped..

I called Harley, apologized for forgetting, and

thanked him for helping. He very kindly accepted my apology. I'm still chagrined I didn't list him last month along with everyone else.

So, "Thanks again, Harley!", and again, I'm sorry.

## The Bent Bird

*By Don Weigt*

### Tanks and Engin Runs

Model airplane engines, glow and gas, need fuel to run and to power our models. It's often pretty easy to get them to work well. If put in kits or ARFs as shown in the instructions, they usually work fine. But, not always. Then what?

What's going on here? It may be a problem with bad fuel that's picked up water or lost its nitromethane. It may be dirt clogging the needle valve. But, it may also be the tank's location.

Most of us know that the air drawn into the engine through the carburetor makes "suction" to draw the fuel into the engine. Well, in theory, "there ain't no such thing as suction!" What there is in the carburetor is an area of reduced pressure. The full air pressure, or muffler pressure, which is a bit higher, pressing against the fuel in the tank, forces it through the needle valve into the reduced pressure region in the carburetor. It's sort of picky, I know, but that's really the way it works.

At sea level on a standard day, air pressure could support a column of glow fuel about 30 feet high against a perfect vacuum. Gasoline is lighter (less dense), so its column would be about 40 feet high. If a tank were farther below the needle than that, even a perfect vacuum would not give a sufficient pressure difference to raise fuel to it.

The pressure reduction in the carburetor is a small fraction of atmospheric pressure. So, most glow engines will only be able to lift fuel from about 1 foot below the needle valve with the needle wide open. Most gas engines can lift fuel farther because in addition to gasoline being less dense, the gas carburetors usually include a clever crankcase pressure powered fuel pump and pressure regulator. Glow engines can use muffler pressure to increase the pressure difference and lift fuel farther than just the carburetor "suction" can.

The distance the fuel can be lifted is important, because in a simple carburetor, it affects the mixture. As the fuel level is lowered, the engine leans, and as the fuel level is raised, the engine richens. This leads to several effects.

The tank is usually behind the engine, so when we raise the nose, the engine gets leaner.

That means the engine makes more power when it noses up, unless it gets too lean and quits. It also gets hotter, because there is less fuel evaporating in the engine to help cool it, and the burning mixture is closer to ideal, so the temperature of the burning fuel/air mixture is higher. The airplane slows when its nose is up, so the engine makes the most heat when airspeed is lower and there's less cooling.

When we lower the nose, the engine gets richer. It also gets cooler, because there's more fuel evaporating in the engine to help cool it, and the mixture is less ideal, so the temperature of the burning fuel/air mixture is lower. The airplane speeds up when its nose is down, so the engine makes less heat when airspeed is higher and there's more cooling.

Please note that every glow engine, unless it has a fuel pump, will run leaner at the end of the tank and flight than at the beginning. So, if we set the engine right at the peak before taking off, it'll probably be too lean by the end of the flight!

These effects are reduced with muffler pressure, but NOT gone!

Control line stunt fliers used these changes to good advantage in the "old days", and probably still do. They normally set the engines very rich. The airplanes cruised at rather low power. When their noses went up to loop or climb, the engines leaned out and made lots more power. Descending, the engines got very rich and slowed. This helped keep the airplanes at quite steady speeds, even as they climbed and descended vertically in loops and wingovers. They also tended to lean a bit and gain power in any tight turning maneuvers, which also require more power.

Some of the hardest maneuvers, which required the most power, were at the end of the pattern, so they were done late in the flight when the airplane was a bit lighter, the CG a bit back so the plane turned better, and the engine was leaner and making more power.

We generally don't want these effects in our radio controlled models. Often their tanks are positioned so the fuel level is about even with the needle valve when the airplane is at rest. This is primarily for easy starting!

If the fuel level is far below the needle valve, the fuel line will tend to empty and it will be hard to start the engine. The prime may burn away before the fuel line fills and the engine will quit. It may even be harder

to prime the engine by choking, requiring an extra flip or two to fill the line before fuel gets to the needle valve.

If the fuel level is above the needle valve, the fuel will tend to run out of the tank until it empties to the height of the needle valve. This wastes expensive fuel. Even worse, it floods upright engines and makes them hard to start. If too much fuel gets in the space above the piston, it can prevent the engine from turning over. Attempting to force it through can damage the piston or connecting rod: both expensive!

If the plane is a tail dragger, the tank will tend to be a bit higher and more in line with the needle valve in flight attitude. If a tricycle gear, the flight attitude often is about the same as at rest. So, the tail dragger will tend to richen up a bit as it gains speed on takeoff and the tail comes up. The trike geared plane won't change much.

If the tank is installed typically, as just described, when the plane is inverted, the tank will be higher relative to the needle valve than when right side up. Put more precisely, the tank will effectively be higher for negative G maneuvers and lower for positive Gs. So, the engine will usually run leaner right side up and richer inverted, leaner in inside loops with up elevator and richer in outside loops with down elevator. Especially with muffler pressure, it may change too little to be easily noticed.

There's another thing that may make the inverted airplane's engine lean out if it remains inverted or pulling negative Gs. The tank usually has only one vent/breather/pressure line. It ends at the top of the tank, so we can fill the plane through the fuel pickup line to the engine or a third line. Meanwhile, air inside the tank escapes out the vent/breather/pressure line. Flying, most tanks have only two ports: one connected to the needle valve, the other vented to atmosphere or connected to the muffler pressure tap.

When the airplane pulls negative Gs or flies inverted, the fuel goes to the normal "top" of the tank, and the end of the vent line is in the fuel. Briefly, the pressure in the tank will remain the same, but because of tank location the engine gets richer. As the engine uses fuel, the pressure in the tank will drop until the pressure at the vent line end, in the fuel, is equal to atmospheric pressure or the pressure from the muffler tap. So, the engine may go rich when inverted, then gradually lean out. How much it leans out depends on the tank's location relative to the needle valve.

Some control line planes used tanks with the only vents at the bottom or outside to keep engine runs constant as the fuel in the tanks varied from full to nearly empty. So, having the vent in the bottom of the tank, immersed in the fuel, has a real effect! It may make the engine run as though the inverted fuel level were at the top of the tank, bottom of the liquid. That is to say, it may run the whole tank inverted just the same as it would other wise run inverted when the tank was almost empty: leaner than earlier in the flight.

So, where does this all lead? If you have a plane that runs very differently inverted, you'll have to add a pump or move the tank. With the engine running properly on the ground, and with a helper, throttle back and carefully invert the plane. It's OK to hold a smaller lower powered model, but bigger planes or those with powerful engines should be set in a cradle. If the engine run changes, your helper should try to keep it running by adjusting the throttle. If it speeds up briefly and quits abruptly, it's very lean. If it runs sloppily then quits, it's very rich. If it slows and runs rough, it's rich, and may smooth out if you raise the nose.

If the engine runs RICHER INVERTED, the tank needs to be RAISED so the engine will be richer right side up. Then, when the needle is readjusted for that, it will be closer to correct inverted.

If the engine runs LEANER INVERTED, the tank needs to be LOWERED so the engine will be leaner right side up. Then, when the needle is readjusted, it will be closer to correct inverted.

This is what the control line fliers did and do to make their engines run the same speeds right side up and inverted. It will work for RC models, too.

Testing, then moving the tank, then testing again, is hard and most of us wouldn't enjoy it. But, that's about all you can do. To find the proper tank height the first time you change it, try using an external temporary tank of the same size and type, and find the height it needs to be for the engine run to be the same right side up and inverted, both in approximately the attitude required for level flight at nearly full power.

Hope you never need to do this. If you do, good luck!!

## **Swap Meet Season Tips**

*By Charles "Chuck" Benner*

*This article is reprinted from Loops & Lies, the newsletter of River Valley Flyers, Wisconsin Rapids,*

*Rich Ida, Editor.*

Swap meet and auction season is upon us and many R/C goodies can be found for the beginner and the seasoned R/C pilot alike. There are a few S/C swap meets in our region beginning in October and lasting through April, including these Wisconsin locations: Wausau, Madison, Brillion, Darboy and Shawano.

There are many good deals to be found on airplanes, gliders, helicopters, cars and boats; from already completed kits with R/C radio, motor, batteries and have already been test flown, to basic kits that need to be built from scratch. For the new person getting into flying, or for the experienced modeler looking for some new toys at a reasonable price, there is the perfect opportunity to save a lot of money.

In the past few seasons, there have been R/C airplanes ready to fly, worth in neighborhood of \$400 being sold for as little as \$100, R/C gas motors worth \$350 selling for \$150 and R/C radios worth \$250 selling for \$110.

As you might expect, there are some downsides when the prices are this good. You have to judge whether or not what you are looking at is a good deal and the easiest way to this is to go along with someone else who has been in the hobby long enough to check on any problems the model may have.

For example, are the fuselage, wing, rudder and elevator straight and not twisted? Does the motor work? Does the radio work properly? Look inside of the airplane at all the glue joints. Does it look like a neat job or does it look like a three year old's rendition of the Mona Lisa with Popsicle sticks?

This is also a good time to look for any damage from crashes, to see if anything was installed incorrectly or if it has shoddy workmanship. The wing and fuselage on the R/C model are easiest to inspect.

The Radio, motor and batteries are another story. With the radio, check to see if it's gold stickered (narrow band). Is it on the same frequency that you need? A new crystal could cost you another \$10. See if all the parts are there for the radio, including the transmitter, receiver, batteries, wiring switch harness, servos, servo arms, servo mounting tray and battery charger.

Turn on the radio transmitter and the receiver and, with the transmitter antenna down, have someone walk with the transmitter 30 feet away. Have your buddy operate one control at a time while you listen and look at how the servos work and notice whether they work

smoothly in both directions. Now put your finger on the top of the servo arm and apply a little pressure to the servo arm. Does it still work smoothly in both directions or does it get slow, stop or get jerky?

R/C radios can be the reickiest things to buy and work well . If you buy a radio, the best thing to do is to have an old airplane as a test mule. If there are any problems with the radio, it will show up in the test mule instead of the good airplane, returning it to kit form when it meets the ground at the flying field.

If the radio you buy is more than five years old, consider changing the batteries to new ones. I find the most handy radio parts to purchase are the servos, wiring harness and extra receivers for my type of radio transmitter so I can have radio gear installed in all of my airplanes. Then I can use just one transmitter on multiple airplanes.

When shopping swap meets for motors, check to see what the general condition looks like. Are there cracks on the muffler, carburetor, motor mount or shaft end bell? Flip over the prop. It should turn smoothly. Next, check the compression of the engine by putting your finger over the carburetor opening to seal it off. Turn the propeller in both directions. It should hold a good vacuum on your finger.

Look for any slop in the drive train when you turn the propeller over to the compression side. The vacuum should increase or decrease correspondingly with the propeller movement in a good engine.

Try to pull and wiggle the propeller shaft side to side. It should be tight and not wiggle or pull toward you. This is where a Phillips screwdriver, flat blade screwdriver and a flashlight come in handy. Remove the muffle and look at the general condition of the piston and cylinder wall. It should be shiny with no scratches, chips or burned score marks. Look for rust and varnish deposits from not being used for a long time. Luckily, model airplane engines are fairly simple mechanical devices and problems will be fairly easy to see.

When you go to a swap meet and auction, know your prices and take an R/C hobby catalog along with you to compare prices. This is the time to wheel and deal and save some money on hobby supplies.

## **Flying the Mail**

*By Jerry Buss*

In mid-1924 Clyde Kelly, a Congressman from Pennsylvania, introduced a bill that would revolutionize non-military aviation and on February 2, 1925 it was

signed into law by Calvin Coolidge, who had succeeded to the White House upon the death of Warren Harding in 1923. The Contract Air Mail Act, popularly known as the Kelly Bill, described itself as "An act to encourage commercial aviation and authorize the Postmaster General to contract for air mail service." It was what Otto Praeger and his successors had been aiming for from the outset.

Billy Mitchell, saw it as an impetus spurring civilian inspired progress in aircraft design and performance and thus as a personal threat. He jealously wanted the army to have the leading role in aviation development. On the other hand, industrial leaders, like Henry Ford, saw it as an unprecedented opportunity to do business either building or flying airplanes. Business leaders of all stripes and types saw it as hope for fast communications, such as shorter turnaround times on money transfers and delivery of orders. It seemed to offer something for almost everyone except Mitchell and there were few other detractors. The Postmaster General was authorized to extend, combine or eliminate routes at his discretion, according to public interest.

Contractors would be allowed to carry other cargo or passengers at rates determined only by them. Air mail postage rates were set at ten cents per ounce on carries of under 1,000 miles, fifteen cents on those between 1,000 and 1,500 miles and twenty cents on routes longer than 1,500 miles. Contractors would receive four fifths of the revenue generated with the government retaining the remainder.

Had 1925 produced nothing other than the Kelly Bill it would have been a noteworthy year, but there was a lot more. One such development involved Bill Stout, a close friend of Henry Ford. He designed and built a single engine all corrugated duralum high winged monoplane transport designated 2-AT in a plant adjacent to the Dearborn airport and on April 13, 1925 the Ford Motor Company began using one to make daily shuttle flights between Dearborn and Chicago to transport auto parts and other materials between plants in the two cities. When space was available, it also carried Ford personnel. By year's end, the schedule was expanded to three shuttles daily, with two additional daily trips each way to and from Cleveland.

So pleased was Ford with the operation that he bought Stout's company and set Stout to work on building a tri-motor version of the 2-AT, but the project flopped. Friend of Stout or not, Ford was not a sentimental man and he fired him. He then assembled a

design team of John Lee, Harold Hicks, Otto Koppen, William Mayo, James McDonald (who later founded McDonald Aircraft), and William Towle. Together, they produced the the heaviest commercial lifter of its time, the Ford Tin Goose, which first flew in 1927.

On July 1, 1925 the Post Office opened two overnight shuttles between Chicago and New York.

A Las Vegas man, Harris Hanshue, had been dreaming of the day when airlines would be able to carry passengers and the appearance of the Kelly Bill set him in motion. Southern Cal reidents were jealous of the fact that San Francisco was the the western terminus of the transcontinental route and so it was to Los Angeles that he turned after incorporating a company that he named Western Air Express - WAE - in July. He found eager financial backers and prepared to bid for one of the routes to connect LA with either Reno or Salt Lake City, all the time looking ahead to the day when he would be able to carry not only mail, but passengers too. He was typical of many others who saw with remarkable clarity what was down the road - and not very far down it at that, for aviation was no longer the curiosity it had been at the end of the Great War.

On November 7, 1925, five firms, out of seventeen that had bid, were awarded contracts. The Post Office would continue to operate the transcontinental route and the privates would operate as feeders for the present. The routes, referred to as CAM's, Contract Air Mail (routes), were:

- ÿ CAM 1, Boston - New York to Colonial Air Transport (mostly owned by Curtiss). Juan Trippe, one of the original partners in Colonial, would later pioneer international air travel with Pan Am -- a carrier he founded in 1927 to transport mail between Key West and Havana.
- ÿ CAM 2, Chicago - St. Louis to Robertson Aircraft Corporation (which became part of the Universal Aviation Corportation, which in turn merged with Colonial, Southern Air Transport and others to form American Airways, predecessor of American Airlines).
- ÿ CAM 3, Chicago - Dallas/FT Worth, National Air Transport (would merge with Transcontinental Air Transport, another Curtiss subsidiary, to form Transcontinental and Western Air).
- ÿ CAM 4, Los Angeles - Salt Lake City, Hanshue's Western Air Express.
- ÿ CAM 5, Elko - Pasco, Washington, Walter Varney (National Air Transport and Varney would later

become parts of United Air Transport, predecessor to United Air Lines).

Ford Air Transport signed contracts in January, 1926 for CAM 6, Detroit - Cleveland and CAM 7, Detroit - Chicago and despite a late start actually was the first to begin operations. By mid 1926 all routes were in operation and two more CAM's were added besides, making ten routes in all. By year's end, there were twelve. More were added over the next three years. Paying passenger carriage was finally a reality. In 1926 about 6,000 persons flew as passengers on air lines. In 1930, the total air line passenger load exceeded 400,000 people. The last transcontinental flight by a Post Office pilot was made in mid 1928 and now the entire air mail service was a commercial operation. Still, there were some serious growing pains yet to be experienced.

### **The AEROMART**

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