

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

Monthly Newsletter of the Madison Area Radio Control Society  
Madison, WI

AMA Charter # 665

Volume 41 May 2002 Issue 5

## MARCS General Membership Meeting, April 4, 2002

*by Burr Fontaine, Secretary*

The meeting was called to order by President Wayne Lanphear at 7:10 p.m. with 45 in attendance.

**Visitors and New Members:** David Forget and son Nicholas, Steve Schomacher and son Mike, and David Usitalo were visiting tonight. Joe and Deborah Kunz joined tonight. Sue Gill was new member last month. George Jerdee was a member several years ago and has renewed his membership tonight. There were some others whose names I missed. If you are one of these people, please see me during the next meeting so I can add your name.

**February Minutes:** The minutes of the February meeting as printed in the March issue of SPARKS were accepted.

**Old Business:** The following corrections to the MARCS 2002 Calendar of Events that was printed in the April issue of SPARKS were noted: A Fun Fly, scheduled for June 29, was omitted; the Big Bird Fly In should have been listed as June 22 instead of June 23; and the Float Fly and Picnic should have been listed as July 21 instead of July 23

Service Awards, for 2001 but not presented at the February Awards Banquet, were handed out to Bob Miracle for his contributions as a Board member and for his general help at the field and to Dave Toepfer for running the raffle at the monthly meetings.

A replacement for Dave as raffle manager is needed. Please contact President Lanphear if you are interested.

**New Business:** Harley Nelson summarized the plans for the Saturday, April 27 Field Day at Kettle Field. Work will begin about 9 a.m. The John Deere Gator has been reserved and Charlie Schultz will have his Bobcat and roller. The primary task will be to fill-in some of the smaller low-spots in the field and apply a top dressing of topsoil as needed. Members should bring a shovel, garden rake and/or wheelbarrow. Jerry Buss

### *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.

#### **Officers:**

Pres: Wayne Lanphear, bgbird@att.net  
Vice Pres: Don Weigt, weigt@mailbag.com  
Secty: Burr Fontaine, aburr@mailbag.com  
Treas: Ed McDonald, enmcdonald@prodigy.net

#### **Membership information:**

Ed McDonald  
Phone 249-0734

#### **Flight Instruction Coordinator:**

Dan Dudovick  
Phone 273-4339

#### **Mail address for official business, other than for publication in SPARKS:**

PO Box 8864  
Madison, WI 53708

**MARCS Web Site:** <http://www.litetrol.com/marcs>

**War Birds Web Site:** [www.mailbag.com/users/spierings/whizzers.htm](http://www.mailbag.com/users/spierings/whizzers.htm)

**Electrics Web Site:** [www.madindoor.com](http://www.madindoor.com)

#### **Editor:**

Jerry Buss  
1809 Browning Rd  
Madison, WI 53704

e mail: [jbuss@itis.com](mailto:jbuss@itis.com) Phone: 244-8534

Contribution of articles is encouraged. Deadline for submittal is the 20th of the month

guarantees brats, baked beans like Grandma used to make and soda for the workers.

Chris Spierings is pleased with the interest shown in the Warbirds Over Dane, June 8, event. In addition to the local interest, he said 21 pilots from out of state have indicated they will attend. Volunteers from MARCS are needed on the day of the event to help in several areas. Contact Chris if you can assist for a couple of hours. This is a "warbird only" event, i.e. the aircraft are expected to be a model of actual warbirds and with appropriate warbird markings. There are no restrictions on size of the model or age of the full-size warbird.

President Lanphear summarized the Board's discussion of changes to the MARCS' website. The present plans call for the Club to purchase and register a "domain name" for \$15/per year that will identify our website and we then will proceed with the selection of a Internet service provider to host our website. The new website will keep the same features that are on our present website.

Two or three Club members are needed to serve along with three members of the present Board on a nominating committee to present candidates for the fall election. Please see President Lanphear if you are interested.

The only downside on an otherwise great Awards Banquet this year was the noise from the adjacent room. If you have suggestions, different place, different time, or whatever, for improving the banquet next year please forward them to Dave Rush or President Lanphear.

David Usitalo described his program at George's Shop that has been in operation since the fall of 2001. A young person (grades 4 through 7) may come to the shop with an adult, not necessarily a parent, and make a simple wood project using hand tools. David plans to add rubber-powered airplanes to the list of available projects this year and is looking for adult help. His phone is 246-0141, e-mail [usital@att.net](mailto:usital@att.net).

**Raffle Winners:** Wayne Lanphear - Glue; Dave Jeardeau - 4 Star Plane; Harley Nelson - Plane; Nick Burgette - Prop; Jordan C. - Glue; Hubi Schneider - Prop.

**Show & Tell:** Pictures are available on the Club's website.

Bill Kinney brought a U.S. AirCore Colt. The plane is made entirely of Coroplast and the AirCore people refer to their planes as "completely pre-decorated and almost indestructible."

Harley Nelson had a Sig Four Star 40 with a P-51 color scheme, and a Phaeton 90 that was scratch built. Actually it was Harley's Phaeton 90 #3, but that's a story Harley should tell.

Dave Rush also brought two planes tonight. The first was an Acro Bipe that was a rubber-band converted to electric direct drive GWS motor. Total weight with battery was 3.4 oz. The second was a Flying Styro P-51 kit that was also rubber-band converted to electric with a total weight of about 4 oz.

Miel Vermeluen is looking forward to flying his Sig Somethin' Extra that he recently finished and brought tonight. He said it went together very well.

Chuck Backman's P-51D, 81" span, Dave Platt kit was finished as a model of a P-51 that a personal friend and former member of MARCS, Dick "Tiger" Martinson, crewed in 1944. Walt Marozick belongs to the Bong Eagles Free Flight model Airplane Club in Milwaukee and he brought two models he flew in their spring contest last month.

Don Weigt had a 1/4" foamcore, flat wing model that he designed for easy building. He has flown it in the Dome, but it was somewhat difficult because it weighed 18 oz. and required speeds in excess of twice those of the other, lighter but slower, planes that were flying at the same time.

The meeting adjourned at 9:15 p.m.

## Don't Forget Field Work Day

With a little bit o' luck you will receive this before Saturday, April 27, the day we do our annual field maintenance work. Come on out and bring your rakes, shovels, wheel barrows, grass seeders, work gloves, etc. It's part of the price we all have to pay to have a good flying field and your help is needed. We'll start about 9:00, or earlier, if you're there. Lunch will be served.

## First Flight Day for New RCer's

*By Dan Dudovick*

On Saturday May 11th, 2002 at the MARCS field our instructors will be on hand to help new members preflight their airplanes.

If you are new to the club and have not started working directly with an instructor, please join us that day. We will review the field rules, talk about safety and field etiquette and conduct a preflight ground check of your plane and radio equipment. Time and weather permitting, we will flight-test the airplane and try to squeeze in a buddy-box. Flight Instructors will be available at 9:00 am.

having that problem, contact Ed McDonald to exchange

## MARCS 2002 Calendar of Events

Event	Date	Location
First Flight Day for new RCer's	May 11	Kettle Field
War Birds Over Dane	June 8 (9, if rain)	Kettle Field
Big Bird Fly In	June 22	Kettle Field
Fun Fly	June 29	Kettle Field
Boy Scout Fly In	July 13 (14, if rain)	Kettle Field
Float Fly and Picnic	July 21	Rile Deppe Park, Marshall
1.5 Meter Hand Launch	August 17	Long Island Sod Farm
Ken Kindschi Scale Rally	August 18	Kettle Field
Fun Fly	August 24 (25, if rain)	Kettle Field
Fall Thermal Soar	September 7	Long Island Sod Farm

### “Go Play Outside”

#### (Dome Flying is Moving Outdoors)

*By Clayton Greaves*

Our indoor season is officially done. It was a great run since November. Not a single Sunday morning was missed. First timers became combat veterans. Kids who only dreamed about RC flight became accomplished indoor flyers. Excellent creativity was exhibited. Too, we witnessed a great willingness by all flyers to help others stay airborne whether they needed glue or propellers or a replacement motor, or a fresh battery pack. Lots of fun. Hope to see you all again in the fall at the Dome. You may have read that Urban Links is under new ownership. Until further notice, our hope and expectation is that fall dome activities will be business as usual. Pete Aarsvold will be working out any details with updates available here or at [www.madindoor.com](http://www.madindoor.com)

**Outdoor electric flying season starts Sunday, April 21, 2002 at the Verona flying site at 7:00 am.**

Badger Prairie Park requires a separate permit. We will have Dane County Parks License application forms for anyone needing one. If the winds are light, almost all of the Dome planes will perform well outside. See you there Sunday Mornings!

### Website Update

*By Wayne Lanphear*

Chris Spierings has obtained the domain name [marcswi.org](http://marcswi.org) and will soon have the initial page up and running on affordablehost.com. Work still needs to be done but we are on our way. For now, the old “litetrol” site is still active.

### Does Your Gate Key Work?

Due to a recent lock change, some members have been reporting that their keys don't work. If you are

your key for a new one.

### Come on out to War Birds Over Dane

*By Chris Spierings*

Warbirds Over Dane 2002 is June 8 with a rain date of June 9. The focus of this event is getting a bunch of radio controlled warbirds of any era together and displaying and flying them. So what is a warbird? For the purposes of outlining the RC models which will be permitted to take part in the event here is a description: Any RC model of a military aircraft of any type flown by any military so long as it is in military markings.

So what does that mean? If you've got a Midwest Mustang bring it. If you've got a Cessna 182 done up in Civil Air Patrol markings its welcome. An Aerostar .40 done up marked to resemble an L-19 still isn't a warbird. If you take that Aerostar kit, make it a tail dragger, change the tail surfaces add a military color scheme and modify the wing to resemble the Cessna wing, I'd say bring it out. If you've got a Ryan STM in the markings of the Dutch training outfits bring it. A Skywalker in training command colors isn't going to meet muster. A Kougar or Patriot in Thunderbird markings is a nice looking plane but it's not a model of an actual military aircraft. A CAI Raptor in Navy markings really cool but it's not a warbird. Please don't bring a Hog Bipe in training colors and try to pass it off as a Stearman. A Beech King Air in Army markings will qualify. If you've got a Cub in military markings it is welcome. A T-6 in one of the Reno Racing color schemes doesn't fit the bill. DC-3's, or more correctly C-47's, served the military for a long time. In military markings, we'd love to see it. Hopefully these examples will give you an idea of what the guidelines are.

Your plane doesn't need to be a big dollar, giant scale monster. Any size RC model that fits the above

definition of a military RC model is very welcome at the event. We're really trying to do a couple of things with this event: Showcase the RC warbirds, have a nice get together to promote camaraderie, show a bit of history and first and foremost have a good time.

If you can make it, the flying starts immediately after the pilots briefing at 9 AM. Even if you don't have a plane you want to bring out or that isn't a warbird you still may want to come out and see the planes that do attend. No landing fee will be charged and food will be available around lunch time. If you have web access you can get to the event web page at:

[mailbag.com/users/spierings/warbirdsoverdane](http://mailbag.com/users/spierings/warbirdsoverdane)

## Inside the Box

*By Jerry Buss*

Last month we talked about selecting your trainer and getting it ready to fly. In order to put it in the air when you get it to the field there are certain auxiliary items that you must have and some that may not be essential but certainly are convenient. That's what this is about.

First, you need some kind of box to serve as a caddie to keep all of your good stuff together. You don't want to have to make several trips from your car to the set up bench and probably lose stuff because it's lying around loose.. Precut and painted boxes that are very serviceable can be bought in any hobby shop. If you walk around at the field, you can inspect what others are using and build something like them for a whole lot less money. If you were smart enough to build your trainer, you're smart enough to build your field box. Take into account the things listed below that have to go into it and you can design your own. Some beginners often use plastic tubs that can be bought at Shopko or Target. They are a temporary solution. Some kinds of plastic tool boxes can be adapted, but they won't be as satisfactory as a real field box design. There are two criteria for a serviceable field box. Obviously, the first is ample capacity in a shape to accommodate your needs. The second, which is much less obvious, is weight. Remember, it's not just the box that you will need to carry around, but the stuff in it and a full gallon of fuel, a lead-acid starter battery and an electric starter weigh up fast.

You don't absolutely need an electric power panel, but if you have one, you won't regret the cost. By all means, get one.

You will want the fuel jug to be contained in the box and, if you get an electric fuel pump the power panel will supply power to it. Electric or crank type pumps both work fine. If you get a crank type, consider the Six

Shooter. Other hand cranks tend to develop leaks; Six Shooters don't.

Hobby shops have kits that allow you to drill a couple of holes in the cap of your fuel jug to install brass fittings to attach hoses that greatly simplify fueling and defueling. Get one of these kits. They are convenient and they keep dirt out of the fuel jug.

Speaking of fuel, put a small receptacle in the box to catch fuel overflow when fueling up. Fuel is too expensive to spill and it kills the grass in the pit area. I use a Gerber baby food jar and then I pump the overflow back into the fuel jug.

You will need an electric starter motor and it will plug into the power panel. There are two kinds of glow plug starters. One is self contained with a sub-C Ni-Cad battery. The other kind plugs into your power panel. The power cord on the plug in kind tends to always be in danger of getting into the prop. If you get the plug in kind, always turn the rheostat knob to zero before attaching the cord to your glow plug. Then adjust the rheostat upward, or you risk burning out the glow plug. A spare glow plug or two should be in the box too, as well as a spare prop.

A chicken stick is a good idea as a back up, in case your starter battery goes dead. A piece of half inch or bigger dowel or some PVC pipe works fine. Never use your bare finger to start your engine, unless you're masochistic and have health insurance.

Hobby shops sell starter batteries of both the lead-acid kind and gel cells. I've never used a gel cell and have no opinion on them. I use a lead-acid lawn tractor battery that I bought at Farm and Fleet. It weighs a ton, but it never goes dead on me at the field. A motorcycle battery from Farm and Fleet is a very good choice. They are relatively light and have more cranking power than the hobby shop kind.

As flight pack batteries age, they tend to become less reliable. In any case, if you make four or five flights in a single outing you may be challenging your flight pack. Therefore you should have an ESV, or Expanded Scale Voltmeter. You can get a very inexpensive analog (needle and dial face) kind or a more expensive digital type, but the analog kind is fine. It's lot cheaper than losing a plane because of a dead flight pack. By the way, when installing the radio in your plane use a switch kit that holds both the switch and the charger lead so you can access it to read the charge level without taking the wing off.

A field charger that can be plugged into the starter terminals of the power panel or hooked up to you car battery is nice to have, but expensive and not essential for the beginner. Wait awhile before buying one of these. You may find you won't need it. A tachometer is needed

only if you have a four stroke engine, so you probably don't need one for your trainer.

In the way of tools, you will need a prop wrench and two screw drivers, a small Phillips type and a small slot head kind, along with a set of Allen wrenches. A needle nose pliers with a wire cutter and a regular pliers are good to have too. A small crescent wrench is handy, but not essential. You will need to have a prop reamer. Either carry it in your field box or ream the spare prop you carry in the box to the proper size in advance, at home. A good magnet is worth having to help find items you may drop in the grass..

Glow engines are messy. You will need a roll of paper towels and a cleaning agent that contains ammonia. Windex and similar products work fine. A home brew of water, ammonia and alcohol in a spray bottle works very well too, but it smells awful.

Don't forget a box of rubber bands to hold your wing on the fuselage. A small metal box with kitty litter or garage floor degreaser will extend the life of the bands by drying up the fuel on them. Also, the kitty litter can be a plane saver if you ever have a problem with the fuel tank leaking into the fuselage.

By the time you get all of this stuff in your box, you will understand what I said earlier about the weight of the box. Lighter is better, but you do need a certain amount of room for stuff. If you aren't into weight lifting, consider two smaller boxes.

## **Whizzers WarBird Report**

*By Craig Lovell*

I guess I kind of dominated the meeting this month because I brought in my nearly complete Jet Hangar Hobbies F-100 and there were a lot of questions and spin-off conversations. Before I talk about that, I wanted to mention that we had the usual turn out, eight to ten people seems to be the norm, and these are always very laid back, informal gatherings, so don't be afraid to join us if you have any interest in military scale aircraft, whether you build them or are even just interested in the history.

Chuck Bachman brought in plans for a 5th scale Pica WACO that he intends to convert to the military training type and colors. At this scale, it builds up to a reasonably large airplane. There was some discussion of new/interesting stuff at Toledo. I noted that Iron Bay Models, the current manufacturer of the old Byron Originals line, is now delivering at least four kits; their Lockheed T-33 and F6F Hellcat being two of note. JET Hangar Hobbies has a new ARF kit of the Bae Hawk for ducted fan. This comes in the British Red Arrow display team colors. This company called Fan-Tastic Models had

these neat little electric ducted fan jets, one was the F-86 and the other was the MiG 15, both intended for indoor or small field flying. These guys are about 24" wingspan models with aileron, elevator, and motor controls, and use the GWS-50 fan unit, a pair of micro servos, and the usual small RX and speed controllers. They are made up of molded and extruded polystyrene, with the fuselages done in shells which come joined together. They look really cool and appeared to fly well in the video they were showing. Maybe someone who made the Bowling Green indoor event on that Saturday evening can give us a flight report.

Balsa USA had both of the Nieuports on display, the 17 and 28. Both are very nice looking ships. They also had yet another new plane, the Fokker D-VIII. This is the single, parasol wing Fokker often referred to as the flying razor. A very appealing aircraft. It's a good thing it isn't released yet (this Summer) or I might have had an extra box to haul home. They didn't have it on display, but I understand that Balsa USA is also coming out with a Fokker D-VII. They really seem to be turning stuff out in high-gear. There was other stuff as well but I can't seem to recall it all just now.

Back to my F-100. A year or so ago I got involved with Jet Hangar Hobbies to help prototype a new kit of the North American F-100 Super Saber. This is a ducted fan model for .45 size fan/engine setups, but could actually take any of the 5" fans, or any of the smaller turbines. My involvement started when pestering the owner, Larry Wolfe, to get me the "Designer Series" kit version of this airplane, which he's had around for a number of years. Essentially, the designer series is really just a fiberglass fuselage, foam core wings, a canopy, and some very sparse drawings (no plans). Basically, you get the big parts and have to figure all the rest out yourself. No problem. Well, somewhere in the process of bugging Larry, the idea of developing this airplane into a full and updated kit came into being, and I ended up working with him on detail design and building the pre-production prototype. Well, after all this time, the thing is nearing completion. It needed to make Toledo for display in the JHH booth, so the month of March saw a maximum effort go into getting it ready. There's still much to do inside before it gets test flown but that shouldn't be too long from now. I'll probably be bringing it to the next MARCS meeting so I won't go into too much detail, but the general specs are: Wingspan 47", Length 54" (it's 1/9th scale) basic four control functions plus flaps, retracts, proportional wheel brakes, and speed brakes. Mine is powered by a K&B .48 running a Turbax 48 fan. I know

you' re not supposed to weigh airplanes, but this one is coming out at 9 lb.. 14 oz. The interesting thing is that our "fearless leader", Mr. Lanphear used to fly the full size version. Could be some interesting stories.

The meeting in May is set for Tuesday the 21st at 7 PM. Rm 100 at the Labor temple. By all means, join us if you can. Well, that' s about it for now... We' re off!!!

## Current Affairs

*By Clayton Greaves*

I love this time of year the trees, the birds, except that I have to face the fact that I still have several incomplete projects I vowed to finish before spring. My real problem of course is that every day I seem to find some cool new RC product and every one I buy puts those other projects once again on hold.

At Lodi last year I spotted for a fellow flying a Great Planes Electro Streak equipped with a Magnetic Mayhem car motor on 10 1200mah cells. This plane flew huge loops every bit as big and round as my gas pattern plane - very quiet, very impressive. I bought the kit and watched it accumulate dust on my shelf. Instead, I sold it and at long last, I'm the first kid on the block with the newly released Electro Streak ARF, (there I went and did it again!). At \$130 with motor, folding prop, ESC, gel coat fiberglass fuse and all hardware, I couldn't justify the time necessary to build my kit. Here's a link to the Great Planes site if you want a virtual look at it. Admittedly, the fit and finish of this kit is better than I could produce myself:

[www.greatplanes.com/airplanes/1055](http://www.greatplanes.com/airplanes/1055)

Also, here's a well-written review of the kit version I found on Ezone:

[www.ezonemag.com/articles/2002/feb/estreak/estreak](http://www.ezonemag.com/articles/2002/feb/estreak/estreak)

The author's plane came in 8 ounces below the ARF kit's specified weight - So much for the advantages of ARFs!

In response to a reader query I thought I'd use this new plane as a subject for this month's article and follow up in later months with some comparisons of up rated power systems.

**“So how do you decide what's the right motor system for your electric”?**

Early on, I studied the various power system recommendations in the Hobby Lobby Catalog and looked for patterns, pretty crude. I made a lot of mistakes. Then I discovered the power system calculator software called Motorcalc. You can use it free by permission on the WWW at:

[www.csd.net/~cgadd/eflight/calcs\\_motortest](http://www.csd.net/~cgadd/eflight/calcs_motortest)

By selecting and then varying the motor, cell count, prop size etc. the software will estimate the prop RPM, Static Thrust, In-flight Thrust, Pitch speed, and the estimated power system weight everything you need for comparison to your project's requirements. Results (Approximate) for the above example were as follows:

Prop RPM:	11085 (8x5)
Static Thrust:	30.8 ounces
In- flight thrust:	22.5 ounces
Pitch speed:	52.5 mph
Full-throttle duration:	2.87 minutes.
Power System Weight:	23.133 ounces
Motor amps:	140

Generally 40 watts/pound will get you in the air and 100 watts/pound will give you unlimited vertical capability. At 43 ounces or 2.6 pounds that's 53 watts/pound (140/2.6) - respectable results but no hot rod. It's no wonder that like-new Turbo 550 motors are a common swap meet item. The challenge of course is to come up with a sufficiently lightweight and affordable group of components for your particular application.

When you sit down and use Motorcalc, I recommend you start with something familiar like a speed 400 at 60 watts and 16 ounces and then explore from there. Pay attention to the current. Its easy to add cells and see the output climb but at a current level that in real life would burn up that ESC you just bought. By increasing prop pitch slightly or reducing the cell count you can adjust current to fit your requirements. Be patient, its fun and enlightening!

Next month I hope to have a flight report on the Electro Streak in stock trim and perhaps a comparison using a hotter motor like the Endoplasma or Astro Cobalt 15 or? I have yet to decide. Send your suggestions to [rcgreaves@tds.net](mailto:rcgreaves@tds.net).

## The Bent Bird

### Landing Gear - #4

*By Don Weigt*

Wire model nosegears also work best when the leg is angled back, with the axle a bit behind a line drawn down through the nose gear bearing holes. These wire gears have a coil formed into the wire leg a short distance below the bearing block or lower bearing. The coil provides most of the shock absorbing and spring action, by winding tighter. This is a good design that holds its shape quite well, even with hard use. Often, the steering arms give more trouble than the landing gear wires themselves!

Bent slightly back with no load, these gears work smoothly. If bent forward with no load applied, they have

to push the plane's nose up to begin to move back and absorb shocks. That is bad, because the gear can't easily do that, so it may push off to the side instead, causing a turn.

This is quite different from most tricycle gear equipped full size planes. Their nosegears often compress and shorten under load, and so they work best angled forward. If you build a scale model of such a plane, it's a good idea to make a spring loaded strut for the nosegear, that will shorten under load just like the big one.

One important note with typical wire nosegear legs is to always install the wire with the coil (or coils if a multiple leg design) behind the gear's pivot line through the bearing block. Look at the way the coil is wound in the wire. When it is behind the pivot line, the way it is formed it will be wound tighter by pushing back or up on the nose wheel.

Since the wire was made as a straight piece, then bent into the finished shape, the stresses remaining in the coil try to straighten it. If the forces on the gear wind the coil tighter, it will resist, and return to its shape when the force is removed. The gear will keep its shape for a long time.

If the gear is installed backward, so pushing the wheel back unwinds the coil, it will quickly relax. You will have a constant battle, needing to bend it into shape often. If this happens, fix it! Make whatever modifications you must so the gear is turned around, and the coil is tightened when the wheel moves back and upward. The coil's spring force will be greater, the gear will hold its shape better, and you will be a happier flier!

Other nosegear tips involve the control arm and servo linkage. Space in the nose is often limited, but use as long a control (steering) arm as you can on the nosegear. The wheel bases of our models are short, so they tend to turn quickly. That is bad when the plane is moving at high speed taking off or landing! Most models can turn much more sharply than they need to, and that just makes them harder to control at high speeds. Usually, the nosegear putrid can be connected to the inner hole on the servo output arm, and to the outer hole on a long steering arm, and it will still be able to turn the plane sharply enough.

There's another reason to reduce nosegear travel. The servo that steers it usually also controls the rudder. On a 3 channel plane, that's your only way to steer the plane in flight. Even on a four channel plane, steered in the air mainly with its ailerons, flying and landing with the rudder stuck would be difficult, especially if it's at full left or right. The jolts transmitted from the nosegear to the servo can damage the rudder servo or shorten its life. A

longer steering arm reduces the servo load, improving its reliability.

The linkage to the nosegear is often difficult to fit and adjust. Ideally, the steering arm should be at right angles to the putrid when the nosegear is pointing straight ahead. That helps make it turn equally left and right. But, the steering arm often needs to be angled away from the firewall for more clearance, forward if mounted to the front of the firewall, backward if mounted behind it.

Don't worry a lot about this! It doesn't make the steering too different. It's far more important that the linkage does not jam before the servo reaches the ends of its travel, including the affects of full left and right rudder trim. Jamming can damage the servo or run down the plane's battery quickly, causing the plane to go out of control.

Adding a block to space the nosegear bearings away from the firewall can help make the linkage work with the steering arm parallel to the firewall and at right angles to the putrid, or at least closer to that ideal.

Nose gears are used hard. The putrid connection to the steering arm needs to be rugged and reliable. A loose nosegear turned crosswise won't make a plane crash, but it makes a landing short and rough! It's like touching down with brakes on.

As with everything near the engine, fuel proof any wood spacers ahead of the firewall to prevent them from quickly getting oil soaked.

## **The AEROMART**

Zimpro AT-6 kit, 101" span, Robarts mains; **\$500.00**

Bud Nosen "Mr. Mulligan" kit, 108" span, fiberglass cowl & wheel pants; **\$225.00**

Ikon N West Gee Bee Model-Y kit, 91" span, fiberglass cowl & wheel pants; **\$300.00**

"Indy" Cub, 80" span in red & white checkerboard, needs engine and radio; **\$150.00**

G-Shark, 80" span ARC. Needs finishing and covering. Has cowl & wheel pants; and a USED Quadra 42; **\$250.00**

All may be seen on my web site.

**Mike Pirkl**

**<http://maddog-aviation.rcplanet.com>**

**Or 877-0419 after 7 pm**

*This space is available free to members to buy and sell non-commercially.*