$\square$


From the President...


Student Night will be starting up soon. We've had an enthusiastic response to our call for instructors. We currently have about 20 names on our instructor list and we had good attendance at our instructor meeting.

We also have a large number of student pilots. I believe we have over 30 now. In order not to become victims of our own success we're going to have to be very organized this year. We will also need our instructors to be dedicated and work with students at other times besides Student Night. We will not be able to get students through the process to their pilot cards if
they're all just fighting for time on Wednesday evening.
Although it will be a challenge, this represents an opportunity both for the club and for instructors. For the club it means a potential expansion of our membership. For the instructors it is a chance to give something back and feel the rewards of teaching something that can give a lifetime of enjoyment to someone else.

The idea of "instructor instructors" has also come up a couple of times. I don't know if we will have a formal designation but certainly those with experience can help the newer instructors learn how best to teach flying skills. Please feel free to offer the benefit of your experience if you have something to offer.
(Continued on page 2)
(Continued from page 1)
Although we will be allowing sport flying on Student Night, we may ask something of the sport pilots in return for the privilege. We may ask you to demonstrate something to students. In some cases we may ask you to give up a flight station or to keep clear of a student aircraft while the student is working on something. Our CFI will have latitude to make these requests. I ask that you please try to cooperate. It is good for the club and the hobby to keep pulling in new
people.
As always, I wish everyone happy landings. Please fly safely as you enjoy your summer.

Ken Gutelius President, Skymasters kennanc@msn.com

## Editor's note....

With this May 2013 issue of The Skywriter, we transition from a hybrid to an all online publication.

When you add up the costs of printing, assembling and mailing the newsletter, as well as the limitations to the format and length imposed by having to maintain two versions of the newsletter, it was decided that the ongoing costs and limitations of printing the newsletter were no longer justified.

Anyone who wants a printed copy can always view the newsletter online and print it from there.

This change also allows us to include longer articles that can be continued past page 10.... something that was no $\dagger$ possible when we were publishing a simultaneous printed version.

We will soon be creating a flyer with pertinent club information that will be printed and distributed to local shops in lieu of the newsletter.

Remember, the newsletter has always been available free for all, on the Skymasters web site:
http://www.skymasters.org/ index.php/new-newsletters

## Paul Goelz

Newsletter Editor

## Front Cover:

Ron Wlosinski's beautiful new
TopFlite Thunderbolt at the field 4-29-2013.

Paul Goelz photo

Earlier this Spring (???) some of us noticed that the Windsock at the field was demolished.

Ron Wlosinski and I decided to take it on as a project and we ordered a good quality windsock and rotational mechanism from an Airport Supply house.

This past Monday was finally nice enough to fly a bit and we took the opportunity to install the new Windsock along with help from Dan Stoltz.


## Propwash By Joe Finkelstine <br> May, 2013

PROPWASH
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## "A fair and pleasing line"

A few club meetings ago, whose theme was "in the bones", I showed up with something that definitely was not meant to fly but was indeed in the bones. For those of you who missed the meeting. I showed up with the start of an $19^{\text {th }}$ century tall ship wooden model. It is a model of one of our US Navy's first vessels, an 18 gun Brig named the Syren. She sailed with the USS Constellation on her voyages to her first real engagements fighting the Barbary Coast pirates who openly pirated the Atlantic seas for more than 300 years, at the time our young federal government had had enough.

I showed up with the ship model truly in the bones, as all I have completed so far are the keel, formers, and the upper gun ports. The initial phase of construction is somewhat similar to building a wing for a plane, but it quickly diverged after I built in the plywood formers to the Keel. There is minimal use of balsa, and minimal use of CA type glues - With few exceptions, this model will be built using good old fashioned wood glue and hardwoods everywhere.

After insuring the formers are square to the keel, the instructions next state to sand the edges of the formers to make a "fair and pleasing line" for planking the sides of the hull. This caused me to stop in my tracks, as I had no idea what a fair and pleasing line was, and certainly no idea how to sand one.

After my immediate panic settled down, I actually first thought of myself long ago in this hobby when I was just getting started and started building my first kit, a trainer from Carl Goldberg models called the Eagle II. Back in this day, ARFs were not an option (let alone even realistically invented yet...) and all beginners would
either have to build their own ship, buy a used trainer at a swap meet, or borrow one from a fellow flyer.

Soon after beginning the Eagle II build the instructions asked me to sand the chin area of the
fuselage to form an "aerodynamic" shape. I bought a few books at the hobby store on building and then discovered the best source of help that was available. Seems there was a group of guys in this RC club called Skymasters, who met every Saturday morning at a hobby shop that closed years ago called Henderson's Hobby. I went there with my Eagle in the bones and got all kinds of advice to sand my aerodynamic shapes along with immediate feedback as my initial attempts were all quite poor.

Besides advice on sanding, several others things began. I made several new friends (many of which I still have in the club), but also I learned far more than just sanding techniques. I was introduced to proper radio setup, engine setup, surface alignment, safety, and a whole host of other knowledge/skill sets that have served me well over the many years in this hobby.

For many of you somewhat new in the hobby, it can be quite daunting to take on anything other than an ARF, as there appear to be many steps in kit or scratch building where experience is needed or required as the instructions sometimes are a bit vague. One of my favorite examples of this instruction style is the old Royal kits. The kit contents were often big blocks of Balsa (for wing tips, cowl, and other shaped parts) with the instructions that literally were - "carve away everything that doesn'† look like the picture on the box" This is one of the reasons Royal is long gone as a kit manufacturer (although I have seen some attempts at reincarnation of them as they made a few specialty kits modelers still like). These kits seem to assume you have lots of experience and can sand those fair and pleasing
(Continued on page 4)
(Continued from page 3)
lines without being told any precise instructions on how to do so, or sometimes even stating it needs to be done.

While this is certainly not the primary reason that building is declining, I would argue it is a contributing factor.

Once I got over the reality that I am never going to be a master modeler who gets an invite to Top Gun, (big scale meet for those of you who have never heard of it), and realized that most modelers are happy to help out, it became much less of a daunting task to take on some of these wonderful kits.

If you find yourself believing you do not have the talent for a kit or scratch building, my message here is for you. You have many resources available to you including several world class builders in our club (just to be certain here, I am NOT one of those world class builders). I still ask for help often when I build, as I always find new things going on to think about with each plane I add to my fleet. I still have questions about ARF's to bounce off of people, and I visit the web for other viewpoints as well.

Allow me to add one more gentle push - We all damage our planes eventually (well, at least I do...) Be they ARF's, ready to fly, scratch built, etc. Eventually we all get caught zigging when we should have zagged. If you have built a kit or two, you will find yourself much more comfortable navigating around the structure of the plane you are repairing. You will have better idea of what is important and what can be altered to fit the circumstance you are now in.

The kits of today are substantially better fitting (thank you laser cutting) to go along with much improved documentation. They are harder to find, as the market for kits is substantially smaller than just a decade ago, but swap meets are still a good place to find older kits, and the hobby stores around us have the newer generation kits that I personally suggest you start with.

If you believe you are going to continue for more than a year or two in the hobby, a significant increase in your knowledge awaits you if you take on a kit or the even bigger challenge of a true scratch build.

Grab a kit and sand a fair and pleasing line to show us at the field.

Joe Finkelstine

## Help Needed

Skymasters are needed to help set up and demo RC model aircraft for the Cub Scouts "Everything Airborne" event at Camp Rotary (Wolcott Mill Metropark) on Saturday, May 18th.
We had a lot of fun last year showing off our models to a LOT of eager Cub Scouts and their parents. They also got to try their hand on a simulator. Click this link for details and who to contact


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## Guest column

"A sensible approach to flying electric powered RC aircraft"

By Teo Terry<br>(continued from the April issue)

## Selecting the right speed controller

Selecting the correct speed controller is relatively simple as the choice is determined by the type of motor being used (brushed or brushless), the intended voltage and intended amperage:

1. Never exceed the voltage rating of the ESC, especially if using the BEC function.
2. Select an ESC that has at least a $20 \%$ higher rating than your application requires. You in-flight current can exceed your static measurements if you happen to jam the throttle very quickly; this is why you need some margin.
3. Make sure to provide proper cooling by exposing the ESC to some airflow.

## To BEC or not to BEC?

Most speed controllers also offer a built in battery eliminator circuit (BEC). This feature allows the ESC to power your radio system directly from the power pack without the need for an additional receiver pack.

In essence, the BEC is a voltage regulator which drops the power pack voltage down to the $5 \sim 6$ volts that the radio system needs. There are two types of BEC circuits:

1. Linear BEC: This design acts as a variable resistor in order to drop the pack voltage down to 5-6 volts. The higher the pack voltage, the higher the resistance needed and the more heat is generated for a given BEC current. This is why the number of servos which can be used drops as the pack voltage goes up. These BECs are generally limited to power packs of 12 volts or lower.
2. Switching BEC: This design behaves in a manner similar to a speed controller by pulsing the current. In general, this style of BEC is more efficient and can be used with higher pack voltages. For Castle ICE ESC, the pack voltage can be as high as 33.6 V .

Deciding to use a BEC or not is a matter of preference: I use them in my .50 sized models. For larger models I would recommend using a separate receiver pack and a voltage regulator. Always make sure to use a good quality switch.

## Selecting the right propeller

The propeller is what converts the power generated by the motor into useful work and as such, it is just a important as the motor itself. Before the advent of lithium batteries, electric airplanes were somewhat restricted in terms of power and flight duration due to the battery technology of the time. Fortunately, this shortcoming could be partially offset by being able to use larger propellers that the equivalent glow engine could use. In general, large diameter and highly pitched propellers are more efficient than small diameter, low pitched propellers. With this in mind, there are a couple of rules of thumb that I have developed over time:

1. Use a propeller which is at least an 1 inch larger in diameter than an appropriate 4-stroke engine would use. Ideally, the diameter should be somewhere between 20 to $25 \%$ of the model's wing span.
2. Unless you intend to do much 3D flying, select a prop that has a diameter/pitch ratio no greater than 2. For example, a $14 \times 7$ prop would be O.K, but a $14 \times 10$ would probably be better.
3. Select a pitch which will give you a pitch speed of at least 50 mph for a .40 sized or larger model. The pitch speed can be calculated as follows:
$P_{\text {speed }}=$ Pitch (in) $\times$ RPM $\times 0.000947$ (in MPH)

## Selecting the battery

The battery is the heart of the power system as it determines how much power is available: the motor can ask for it, but if the battery cannot deliver it, the motor will not get it.

At this point, a brief discussion of the terminology used is in order:

## Capacity:

This tells you how much energy the battery can store: Normally measured in milliamps hour ( mAh ) and it gives you an idea of how big the "fuel tank" is. For example a 3300 mAh battery can deliver a current of 3300 milliamps (or 3.3 amps ) for an hour before it is fully discharged.

## C-Rating:

This tells you of how much current the battery can deliver safely. The current is calculated by multiplying the Crating by the capacity measured in amp hours. For example, a 2000 mah battery with a rating of 15C can deliver up to 30 amps ( 2000 Mah is 2 Ah ; therefore, $2 \times$ $15=30 \mathrm{amps}$ ).

## Battery configuration:

Lithium batteries are normally described using a short hand notation which indicates how the individual cells are arranged. For example, a battery might be described as 3S4P. The first two characters describe how many cells are connected in series in each block (the $3 S$ lets you know each block has 3 cells connected in series). The last two characters let you know how many blocks are connected in parallel (the 4P lets you know that there are four blocks connected in parallel).

Now that we have the basics out of the way we can discuss the different types of batteries available to us.

## NiCAD:

Commonly referred to as Nickel Cadmium batteries. These are the batteries which first made electric flight practical. The ones typically used to power larger models were of Sub-C size with a weight of about 2 oz per cell. A . 40 size model typically required a pack of 12 to 20 such cells. Just imagine how much the battery pack weighed! NiCADs have for the most part been replaced by other battery chemistries.

## NiMH:

Commonly referred to as Nickel Metal Hydride batteries.

These batteries are very similar to NiCADs but have the advantage of being able to deliver twice the capacity for the same weight. NiMHs are being replaced by lithium batteries; however, they do have some features which makes them worth considering:

1. Good quality cells (i.e. GP, Elite, Intellect) are capable of $15 C$ continuous discharge with bursts of up to $25 C$.
2. Under load, a cell can deliver 1.1 volts.
3. They are relatively inexpensive so are an attractive alternative when weight is not of paramount importance (i.e. a trainer with a big wing, or a WWI biplane which needs nose weight)
4. They can be charged in about 40 minutes.

## Lithium:

There are two types of lithium batteries currently in wide spread use: Lithium Polymer (LiPO) such as those made by Thunder Power or Hyperion and Lithium iron nanophosphate as those made by A123 systems, also known as M1 or DeWalt cells.

Although both are lithium cells, they are significant differences:

1. Cell voltage: A LiPO cell is fully charged when it reaches 4.2 volts; a M1 cell is fully charged when it reaches 3.6 volts. It is extremely important to use the appropriate charger. Under load, a good LiPO will deliver about 3.3 volts whereas a M1 cell will deliver 2.7 volts (at 40amps).
2. Weigth/Power density: LiPO's are lighter than M1 cells and have greater energy density. LiPO's are more appropriate in applications were weight is critical, but for general sport flying M1 cells offer the best compromise in terms of cost and performance.
3. Capacity: Currently, M1 cells are only available as 2300 or 1100 mAH cells. High capacity packs require that cells also be connected in parallel making the pack heavier, but still lighter than a comparable NiHM pack.
4. Charging time: LiPOs typically take about an hour to charge. M1 cells can be charged in as little as 15 minutes.
5. Durability: Anecdotal data shows that the M1 cells are more durable than traditional LiPOs.

LiPOs batteries do not tolerate mishandling; particularly to being overcharged or damaged in a crash. Unfortunately, unhappy LiPOs can "vent with flame". With this in mind, I recommend the following safety precautions:

## BALD MOUNTAIN INVOLVEMENT DAY 2013

 was a big success. Due to the dictates of "Mother Nature" Bald Mountain Recreation Manager Andy Cole made the decision to change the work project he had planned for us. Early Friday morning he called and told me that the Headquarters Building was so wet it would not be wise to proceed with the painting project. So, he suggested a "Plan B" which involved clearing overgrown brush from a section of roadside along the west side of Trout Lake and a second area adjacent to the headquarters building. After conferring with Ken Gutelius, we concurred that it would be better to proceed with "Plan B" rather than postponing the work day.Skymasters was represented on Saturday by 24 very hard working volunteers. After early coffee and donuts, I gave a short briefing explaining the projects after which we split into two groups and proceeded to the work areas. The day started off chilly but we worked a steady pace cutting branches and undergrowth and stacking then into piles. Soon we were removing our jackets to cool off.

Work at the implement storage area was completed first. That crew then joined the crew at Trout Lake and by about 12 noon the job was done. It really opened up the view from Trout Lake west across the road overlooking a large reed and cattail filled pond. Job well done!

Once completed, everyone returned to the Headquarters Building where

(Continued on page 8)

## (Continued from page 6)

1. Use a fire proof box for battery storage as well as charging. Military ammunition boxes work well, just make sure that you drill a small vent hole to allow gases to vent in case of a fire.
2. Use the right charger and make sure that you follow the instructions carefully!
3. Use a balancing charger or at the very least purchase a separate balancer to use in conjunction with your regular LiPO charger. Most incidents to take place while attempting to charge an unbalanced pack: one cell becomes fully charged before the rest, becomes overcharged and vents as a result..
4. Cells that are puffed, much warmer than the rest of the pack or have physical damage are a sign of trouble. It might be a good idea to retire the pack. Remember, the consequences of a fire can be more expensive than replacing the battery!

M1 cells appear to be more tolerant of misuse; however, these cells are relatively new. The safest approach is to treat them as if they were LiPOs.

## Teo Terry

Teo's artice will continue in the June issue of the Skywriter with "Deciding on a battery"

## (Continued from page 7)

Field Beautification project will involve improvements to the entrance into the field. Work projects that day will also involve clearing the access and flight line for the new helicopter field. This would be a great opportunity for those interested in flying helicopters to come out and lend a hand getting the field development off to a good start. More information to follow!

Thanks Again,

## Fred Engelman

Involvement Day Project Coordinator


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On Wednesday April 3 we were again very lucky to have a Pre-Toledo visit by Pete Bergstrom, Category Manager (Engines) from Horizon Hobby. Pete was joined this year by Craig Greening, Product Developer, Hanger 9 and Sean Sullivan, Associate Product Developer, Blade Helicopter.
It was a standing room only crowd with 125 modelers from 15 clubs, including a group from Ontario, Canada, in attendance.

The program started with recognition of our hosts at Ultimate Soccer, Tom Korpela and George Derderian. The Ultimate Soccer facility is without compare for an indoor
 we all appreciate your efforts! come by and see these fantastic aircraft.
Mike Pavlock from the Radio Control Club of Detroit (RCCD) was on hand to promote their annual Watts Over Wetzel
(W.O.W.) Electric Event coming up Saturday May 18 \& Sunday May 19.
AMA District 7 VP Tim Jesky couldn't make it but sent along a letter asking me to give an update on Unmanned Aerial Systems (UAS) and Michigan legislation and the F3A fundraiser. Tim's son Andrew is the team captain for the F3A U.S. Delegation to South Africa
 for pattern competition later this year. The costs to transport 4 pilots, their equipment and crew is staggering. The team is selling raffle tickets to defray some of the costs. Prizes include a Ready to Fly (RTF) Ohio Model Products 100CC Extra, RTF 2 Meter Osiris, Hanger 9 Piper Pawnee and an Extreme Flight 2 Meter Vanquish. Thanks to your generosity I sold out of tickets during the program (I have more or you can get them from Tim Jesky). GREAT PRIZES FOR A GREAT CAUSE!

Pete started the Horizon program with the new small displacement GAS (not glow) engines. These engines sip fuel, making them very economical to operate. The program moved to the fantastic new aircraft from Horizon. Pete started with a new foamie designed for smaller (middle school gyms) indoor locations. Bergstrom commented that Ultimate is an outside flying site with a roof! Craig Greening is the designer of the Meridian. Pete asked me to display my Meridian and talk about my experiences so far (all great!). The Meridian comes with everything you need to assemble it for gas, glow or electric.

Craig went through all of the airplanes they brought. The biggest hit was the beautiful giant scale Cirrus. Sean discussed some of the Blade helicopter products. The break brought a mob to the front to ask questions and provide feedback.

AMA VP Tim Jesky provided 2 free admission tickets to the Toledo Conference that were raffled away to those in attendance. Fred Engelman ran the 50/50 with $\$ 76.00$ going to the winner.
Thanks to all for joining in an informative / enjoyable evening. Let's do it again next year!

## Joe Hass

joehass@gmail.com 248-321-7934


## April Skymasters Meeting

 "FPV with Wade Wiley"

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## Other local indoor flying sessions

Thursdays, 9AM to 3PM (6 hours)
51379 Quadrate, Macomb MI
(north off 23 mile, east of Hayes)
Small electric planes and helis
(safe separate heli space)
AMA not required \$10/session
Information: Steve Durecki 586-246-4203

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## May 2013

| SUN | MON | TUE | WED | THU | FRI | SAT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 1 <br> Stoney Creek Float Fly 9AM <br> Skymasters Field Opening | Indoor Rubber Power 1PM to 3PM Ultimate Soccer <br> Indoor flying in Macomb (see page 12) | 3 | 4 |
| 5 | 6 <br> Skymasters Breakfast 9AM <br> Red Olive | 7 | 8 <br> Stoney Creek Float Fly 9AM | Indoor Rubber Power 1PM to 3PM Ultimate Soccer <br> Indoor flying in Macomb (see page 12) <br> Skymasters Meeting $6: 45 P M$ <br> Orion Center | 10 | 11 |
| 12 | 13 | 14 | $15$ <br> Stoney Creek Float Fly 9AM | $16$ <br> Indoor Rubber Power <br> 1PM to 3PM <br> Ultimate Soccer <br> Indoor flying in Macomb (see page 12) | 17 | 18 <br> Scouts demo Camp Rotary <br> Watts over Wetzel (RCCD) |
| 19 Chet Brady Float Fly 9AM Trout Lake $\frac{\text { Watts over }}{\frac{\text { Wetzel }}{\text { (RCCD) }}}$ | $20$ <br> Skymasters Breakfast 9AM <br> Red Olive | 21 | $22$ <br> Stoney Creek Float Fly 9AM | $23$ <br> Indoor Rubber Power 1PM to 3PM Ultimate Soccer <br> Indoor flying in Macomb (see page 12) | 24 | 25 |
| 26 | 27 | 28 | $29$ <br> Stoney Creek Float Fly 9AM | 30 <br> Indoor Rubber Power 1PM to 3PM Ultimate Soccer Indoor flying in Macomb (see page 12) | 31 |  |

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SKYHAWKS
www.romeoskyhmoks.org

## STONY CREEK

 FLOAT FLYing SPONSORED BY THE ROMEO R/C CLUB AND THEwwwflyfrasen.net FRASER FLYING CLUB

## Every Wednesday, May thru September

On June 19th and August 21st we will be flying at Addison Oaks Park, Buhl Lake

## Stony Creek Metropark at Winter Cove 4300 Main Park Road, Shelby Township

Flying from 9 am till noon
Flying Open to AMA Members

Public Welcome

*\$5 per Day Retrieval Fee or \$30 Season Pass
*Plenty of Free Parking
*Great Chance to See This Exciting Hobby
*Main Park Entrance on Shelby Road at 26 Mile Road
*Follow Park Road to Winter Cove
*Plane Retrieval Boat Provided
*All Cars Need Annual/Daily Metropark Sticker - Available at Entrance
*No R/C Boats During Flying Times
*Weekly Email Notification of Flying Status
For more information call Jim Held at 248-641-9724 (H) or 248-835-4491 (C) iimwheld@wowway.com

## Skymasters R/C Club of Michigan

## "We'll teach you to fly"

Join Skymasters for all types of "Fun Flying"
MICHIGAN


Rain or shine, dinner will be served 6:00 pm. at Scripps Rd. Flying Field - Bald Mountain Recreation Area, Lake Orion, MI
> Bring a dish to pass and your non-alcoholic beverages.
$>$ Want a different main dish? Bring one, our grills will be fired up!
$>$ Donations welcomed to help cover the cost of fish and supplies.
$>$ Open flying, with priority to Student flights.
$>$ All motor vehicles require a "Recreational Passport" available at the Michigan Secretary of State, or DNR.

For more information call Bill Dezur 586-739-7124 or - bill.dezur@yahoo.com


Visit our website for location and map at www.skymasters.org All Pilots must have proof of current AMA Membership

Flying open

crion


Saturday June 15, 2013 Skymasters Field
Event Flying starts at 10AM and goes until ???
Potluck dinner at the field, bonfire and NIGHT FLYING! Get a plane ready with lights!!! Camp overnight at the field. Open flying on Sunday.

-Lots of Parking
-Refreshments available at event
-94 dBa 10AM-8PM Night fliers must be extra quiet.
Flying field is located within the Bald Mountain Recreation Area, about 5 miles north of the Palace of Auburn Hills on Scripps Road between Lapeer Rd (M24) and Joslyn Rd.
All vehicles require a Recreation Passport available from Secretary of State or DNR.

For more information email petefoss@skymasters.org Visit our website at www.skymasters.org

The Skymasters field is located in Lake Orion, within the Bald Mountain Recreational Area on Scripps Road (see map). A state park permit is required and can be obtained from the Park Headquarters located on Greenshield Road or at club events. Flying is permitted from 10 AM to 8 PM. The noise limit is 94 dBa at 10 feet. This noise rule is strictly enforced.

Wednesday evening (through August) is Family Night with flying and a pot luck buffet. Bring something for the grill \& a dish to pass.

Wednesday 5PM to 8PM is also Student Night (through August) but there are usually instructors around all day. Meet the instructors and arrange for more instruction time together on other days. Our Chief Flight Instructor is Greg Brausa, 248-373-8949 cgbrausa@gmail.com

From June through August, Club meetings are held at the field, on the second Wednesday of the month at 8 PM. A great chance to fly and socialize. Winter meetings (September through May) are usually held at the Orion Center, 1335 Joslyn, in Lake Orion. Check the
calendar here or on the web site for specifics. Bring a model for Show and Tell, enjoy coffee and donuts and listen to the speaker of the evening.
The Skywriter newsletter is available online at the Skymasters web site and is free to all. It may also be printed from the web site if desired. All contributions are welcome. Please send photos and articles to newsletter@skymasters.org If you know of anyone who may be interested in R/C Aviation, please give them a link to this newsletter or give them a copy of an AMA magazine. It may spark their interest!


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