



**PRESIDENT TO PRESIDENT**

# New Year, New Potential

by Dave Mathewson, AMA President

Happy New Year. I hope everyone had a great holiday season and that 2009 is off to a good start for you.

I've written several times over the last 12 months that one of AMA's goals beginning in 2008 was to become more of an advocate for model aviation and our members. I think we've made some good progress during the last year and we intend to continue on this path during the coming year. I used my column in the February 2009 issue of *Model Aviation* magazine, which will arrive to you in mid-to-late January, to detail some of the highlights of 2008. When your copy arrives please take a few minutes to read about the work the Academy is doing for its members and the direction we're

trying to take AMA to make it a more progressive organization.

In my column in the December 2008 issue of *Model Aviation* I wrote about a video that was being funded and produced by the United States Environmental Protection Agency (EPA) that, in essence, endorsed the use of reclaimed Superfund sites as model aviation flying fields. This is a project that was spearheaded by our East Coast Flying Site Assistance Coordinator, Joe Beshar. Joe has been working closely with the EPA for the last several years. Three years ago he negotiated a written Memorandum of Understanding between AMA and the EPA and this video is an extension of that

effort. The video has since been released and can be viewed by visiting the AMA Web site at [www.modelaircraft.org/news/epa.aspx](http://www.modelaircraft.org/news/epa.aspx).

After watching the video, it occurred to me that, while it is very specific in its focus on Superfund sites, it will also be of value to our members and clubs that are approaching all landowners asking for access to land to be used as a model airplane flying facility. The video runs for about 11 minutes. If you would like a copy or would like more information, please call AMA Headquarters at (765) 287-1256, extension 272, or e-mail Erin Dobbs at [erind@modelaircraft.org](mailto:erind@modelaircraft.org).

please see **President to President ...** on page 2

**TIPS FOR CLUBS**

## When You Can't Go Outside ...

Even though we might like to, not all of us reside in snow-free areas. Snow can be beautiful and even enjoyable, but when you want to fly a model, sometimes it can be harmful.

What can you do? There are several model related activities that can take place when you can't be outdoors.

### Fly Indoors

Some clubs already have access to indoor flying sites, and those who don't can easily find one by searching their community. Look for large building around your town such as a gymnasium or even indoor soccer field. A full-scale airplane hangar is also an easy solution. Just make sure you get permission from the appropriate people before flying anywhere not already designated as a model airplane flying site.

An indoor flying site provides a bit of a different flying experience and games or competitions can be created around it. For example, have members see who can hover the longest as well as the closest to the walls of the indoor site without touching it.

Another great indoor activity is creating some kind of target for your models to fly through. This could be as simple as suspending a few hula-hoops from the ceiling or

please see **Tips for Clubs...** on page 6

### January 2009 CONTENTS

<b>PRESIDENT TO PRESIDENT</b>	pg 1
<b>TIPS FOR CLUBS</b>	pg 1
<b>ON THE SAFE SIDE</b>	pg 2
<b>EDITOR'S PICKS</b>	
How to Glass a Wing Center Section .	pg 3
Charging that New Battery . . . . .	pg 3
Servos . . . . .	pg 4
Give Me Exponential Rates . . . . .	pg 4
Cold Weather Operations . . . . .	pg 5
TAG, AMA Has It . . . . .	pg 5
Battery Shorts, How They Occur . . . .	pg 6
Tips & Tricks . . . . .	pg 7
Cartoons . . . . .	pg 7

# In the Blink of an Eye

Don Nix, *Insider Safety Column Editor*

*"There's a reason I'm alive for a blink of an eye."  
—In the Blink of an Eye by Mercyme*

More often than not, that's about all the time it takes for most accidents to happen. I can think of one personal incident where the quick blink of my eyes saved me from more serious problems.

A couple of decades or so ago while living in Southern California, my wife and I decided to spend a long weekend at a cabin we rented occasionally in a small village up near Big Bear in the San Bernardino mountains.

Being born lazy and losing ground ever since, I'm usually quite content to do as little as possible; especially if it requires exerting any physical effort. This time, though, I had an idea about how to both relax and do something productive at the same time. I'd just acquired a new RC kit I was anxious to get started, and since it was of the type that goes together rather quickly with a minimum of tools or accoutrements, I took it along to build.

Fortunately, the cabin was equipped with a rather large, long table perfect for laying out plans and materials. While my wife lingered over coffee the first morning, I got everything ready to go; punched out all the die-cut parts (pre-laser), identified everything, made sure nothing was missing (even read the instructions!), and reached for the thin CA.

I had been especially careful to bring along a brand new,

partially glued shut. That stuff does set instantly under the right conditions!

Surprisingly, I immediately knew what had happened. The material was packaged at near sea level, and I was up about 7,500 feet in the mountains. You can figure out the rest. The higher pressure inherent in the package at the lower altitude combined with the considerably reduced pressure at a much higher altitude outside effectively converted it to aerosol form for a split second.

This would compare to sudden depressurization in an airliner at altitude, and works exactly the same way. Everything inside responds to an urgent need to go out until the pressure is equalized.

(Brief digression: Don't you die laughing at those disaster movies that show an airliner decompressing with everything and everyone being sucked outside for several minutes? No way, no how.)

I got the model ready to cover by the end of the long weekend, but spent a good deal of time peeling CA from various locations on my face and neck. Incidentally, just plain soap and water will loosen the stuff in most cases so it can be more easily peeled. There are commercial debonders available, of course, but I don't think I'd use them on my face or near my eyes.

Later, in telling the above story to a friend in the CA business, he told me about an experience his company had when installing a new CA filling machine. They got everything—electrical, pipes, hoses, etc.—all hooked up and flipped the switch to give it a trial run. When they did, a hose connection failed and all in the area were pretty well showered with CA ... the thin type that sets instantly.

Point: Most accidents do happen in the blink of an eye, and sometimes it's difficult to anticipate them. Fortunately, most are preventable with a little caution, good sense and forethought, and we'll deal with some of those in future columns.

In the meantime, if you've had an experience you'd like to pass on for the benefit of others, I'd be happy to hear from you: FLYERDON@aol.com.

Happy modeling and flying ... safely. →

*Don't you die laughing at those disaster movies that show an airliner decompressing with everything and everyone being sucked outside for several minutes? No way, no how.*

unopened bottle of the stuff so I wouldn't be stuck without enough to finish or have old material. (Remember that word "stuck.") The container was one where you snap off the top to open, and then reverse it to become the cap to seal it back.

Looking at it carefully to be sure I snapped it cleanly, I did so and instantly got a face shower of CA.

That's where the blink of my eyes saved me. Amazing how fast our body can spontaneously and involuntarily react when attacked. Not a drop got into my eyes, although one lid was

well. The meeting begins at 8 a.m. Sunday morning January 11, and will last the better part of the day. This, as is the general membership meeting, is an open meeting and AMA members are encouraged to take some time out of their day to sit in and observe.

In addition, AMA will once again be holding a general membership meeting at

the annual Joe Nall Fly-In, that will be May 16-19, 2009, at the Triple Tree Aerodrome in Woodruff, South Carolina. The meeting is tentatively scheduled for Thursday evening May 14. More information will become available as we get closer to the event.

See you next time. →

## President to President continued from page 1

AMA will hold at least two general membership meetings in 2009. The first one is scheduled for Saturday, January 10, 2009, during the AMA Expo being held at the Ontario Convention Center in Ontario, California, at a time to be determined. In addition, the AMA Executive Council has elected to hold its January quarterly meeting at the Expo as

From the Milwaukee Area Radio Kontrol Club, Milwaukee, Wisconsin

## How to Glass a Wing Center Section

by Scott Wilke

Many folks have asked me how I manage to get such a smooth polyester resin center section on my wings. Believe me when I say that it wasn't always that way! However, I found that following these techniques, while taking a little more time and effort, is quite affective.

1. Make faint pencil markings, 3-4 inches apart, as a guide on the center section indicating the width the glass cloth and resin will eventually cover.
2. Cut two pieces of glass cloth to the proper width and length. For the wing bottom, cut a length that just approaches the width of the wing (chord), but does not go over the leading or trailing edges. Next, cut a length for the wing top that goes over the top, around the leading and trailing edges and overlaps the bottom glass cloth about  $\frac{1}{4}$  inch or less on both ends. The purpose of this is to keep your seams, if any, at the bottom to avoid having to mate the two pieces at the exact center of the leading and trailing edges where it can be quite difficult to get the cloth to lay down.
3. Mix up about  $\frac{1}{2}$ -ounce polyester resin and put one drop more hardener in the mix than the instructions call for. This works great with K&B resin but might be a little too hot for some other brands. Test your brand before you try it as you will need about 10-15 minutes working time.

Using the pencil lines you made before as a guide, paint a light coat of resin on the center section bottom, just

enough so that it is almost absorbed into the balsa, but not entirely. (Note: This is important and you should avoid excesses here, a little less than more would be better.)

Next, lay the bottom piece of glass cloth on the resin and work it into the resin with your fingers, working all bubbles or wrinkles until it lays flat. You should have good lighting and look at the work from all angles to make sure it is lying perfectly flat. Also, if you are sensitive to the resin, you may wish to consider wearing rubber gloves.

Repeat the above procedure on the top except you will also be painting the leading and trailing edges and overlapping on the bottom. If you think you need more resin to get the cloth to stick, particularly at the LE or TE, use your finger to paint it on because the bristles of your brush will sag the cloth.

4. Let the resin cure for 24 hours in a horizontal position to avoid drips from forming.
5. Mix up another  $\frac{1}{2}$  ounce of resin and paint it over the already hardened surface until you can see the cloth is completely filled and the surface is smooth. Let it cure for 24 hours.
6. Cut off the cloth that covers the servo or wing bolt openings. Sand the center section lightly to remove stray cloth fibers and to blend the resined center section into the rest of the balsa wood. If you did the job right you will have very little or no sanding at all. Isn't that what you wanted in the first place? →

From Wiregrass RC, Enterprise, Alabama

## Charging that New Battery

By Stan Grett and Jim Kale



In recent months, we have heard a lot of discussion on how to charge a new airborne battery or transmitter battery. Charge times have been recommended from 12-24 hours. Dave Thacker of Radical RC is the battery guy I listen to.

He recommends charging the new battery packs at  $\frac{1}{10}$  of the mAh, which is normally referred to as "C." This rate is often referred to in magazine articles and manufacturers' directions as C/10. He recommends that rate for 16 hours. Most NiCd manufacturers also recommend this.

So, if your battery is rated at 1500 mAh; then charge it at 150 mAh for 16 hours.

Be careful, if your charger charges at less than the C/10 rate, you will have to charge it longer. However, extremely long over charges are bad for the battery pack and will shorten its life. Also high charge rates can shorten the battery life if there is anything overcharging at all.

Cycling a new battery pack will help it get off to a good start in its new life. A good regiment to follow is to cycle it for three charge/discharge cycles over a week-long period. If it passes this test, it should give a good long life if maintained and charged properly.

Cycling a new battery pack before the start of each flying season and after the flying season will give you a good idea how the battery pack is holding up over a period of years.

Generally speaking, any battery that is more than three years old is on borrowed time. However, I do know of cases where battery packs lasted as long as seven years. You are betting your airplane though if you try to squeeze just a little more out of your battery pack than it has to give. Battery packs are cheap when compared to replacing airplanes. →

# Servos

by Richard Lindberg

## What's a "servo"?

Servos are small, electro-mechanical devices that are mounted to your RC airplane. When connected with push rods, they move control surfaces such as elevators, rudders, and ailerons.

## What's "in" a servo?

A typical servo consists of a motor, drive gears, output shaft and arm, a circuit board, and a potentiometer. The circuit board contains a signal amplifier and comparator circuits. These items are configured as in the following:

Position + Position

Reference Output

## What differentiates one servo from another?

Primarily the motor, then the amplifier type. Inexpensive servos contain cored motors, which are incredibly common and cheap. The core, or armature, is comprised of metal plates (poles) sandwiched around a metal shaft that's supported by bearings at both ends, and each pole is wrapped with wire. The armature spins inside a hollow center, permanent magnet that lines the inside of a metal can (the enclosure). Power is introduced to the windings, generating an electromagnetic field, which is opposed by the permanent magnet field, thus causing the armature to rotate. More expensive servos contain coreless motors. These motors have the armature on the outside (imagine a hole saw with an arbor attached) that's very light, and rotates around the fixed permanent magnet. Because of the larger size (diameter) of the armature, a coreless motor has a higher torque rating, and the lack of poles allows the motor to center more

accurately while maintaining or holding position with increased authority.

## Okay, that's fine, But what about the amplifier?

There are two basic kinds of amplifiers: analog and digital. Analog (conventional) amps interpret receiver commands and pulse power to the motor armature at 50 cycles per second. The space between pulses is known as the dead-band. If a signal is received from the receiver or the servo arm is deflected, the amp pulses power to either move the armature or resist the opposing force. The duration of the pulse speeds up the motor (longer pulse) or slows it down (shorter pulse). Digital amps interpret receiver commands and pulse power to the armature at 300 pulses per second. The increased pulse cycles command the servo motor to react and perform with more precision. This results in faster response to control command signals, lower dead-band numbers, increased holding power, and much better resolution. Also, these digital amps are microprocessor controlled, and some can be externally programmed. Center and end-point positions, speed, dead-band, rotation, failsafe, and more are programmable.

## Wow! Digitals seem to be the way to go. What's the downside?

In a word, cost. While there's no inherent reason why a digital amp couldn't be incorporated in a cored motor servo, the built-in limitations of such a servo would make the benefits very small. So, multi-pole (less than 3 poles) motors or coreless motors are used, and the cost is commensurately higher. The microprocessor cost is somewhat higher, too, but that's coming down as more servos come to the marketplace. →

From the Northern Utah Radio Control Aircraft Club

# Give Me Exponential Rates

by Matthew George

I wanted to take a few minutes and talk about the use of exponential rates as supported by most of our RC transmitters. After getting back into the hobby over the last several years, I'm surprised at the slow adoption rate (no pun intended) of using exponential rates.

I have even heard recommendations that you shouldn't use exponential rate features on your radio. I can tell you by experience, that any pilot serious about becoming accomplished in aerobatics will make his life much harder if he tries to fly precision maneuvers without incorporating exponential rates into his control surface throws. I am of the opinion that almost any aircraft should be set up with exponential rates on the control surfaces. You will immediately

see an improvement in your flying once you understand and start dialing in exponential rates for all your aircraft. Trainers to unlimited IMAC birds, gliders, sport planes, flying lawn mowers, etc ...

What is the definition of using an exponential rate on a control surface?

Exponential rate is where the servo movement is not directly proportional to the amount of control stick movement on your transmitter. Over the first half on the stick travel, the servo moves less than the stick. This makes control response milder and smoothes out level flight and normal flight maneuvers. Over the extreme half of the stick travel, the servo gradually catches up with the stick throw, achieving 100% servo travel at full stick throw for aerobatics or trouble situations.

All the newer radios support this feature and the best part is the fact that no physical change is required on the aircraft. It's a simple matter of programming your radio to use exponential rates on some or all of your control surfaces including your throttle.

Have I convinced you to give expo rates a try? It's not scary; I promise. Pull out your transmitter manual and start reading. It's usually a simple matter of scrolling through your on-screen setup menu and finding the option to set expo for each control surface.

please see  
**Give Me Exponential Rates**

... on page 6

# Cold Weather Operations

by Darwin Evelsizer

It's that time of year again when the temperatures drop to obscene levels and that very nasty four letter word, SNOW, may make its appearance.

A few modelers are insane enough to fly during cold weather. This can be fun if you follow a few simple rules or suggestions.

- Dress warmly. When the temperature is low, even the slightest breeze can make it feel a lot colder. Wear a coat with a nylon shell, a hat, warm waterproof shoes that will keep your feet dry, and lightweight gloves. A thin pair of gloves will help keep the hands warm without impairing your feel of the transmitter too much. One of the solid or liquid fuel pocket warmers helps a lot.
- It is somewhere between very difficult and impossible to get model fuel to vaporize inside a cold engine. The prime remains a liquid and just lies in the bottom of the crankcase. Use a few drops of lighter fluid for prime instead. This stuff will vaporize much more easily than fuel and will get the engine running for a few seconds while it warms up enough to run on regular fuel.
- Use an electric starter or chicken stick. If you are using bare fingers to flip the propeller and it kicks back, it hurts a whole lot more in cold weather. The electric starter will usually turn the engine over fast enough to vaporize even regular fuel.
- If you come out to the field without either lighter fluid or an electric starter, remove the glow plug and squirt several drops of fuel directly into the cylinder hole. This may very well flood the engine, but flipping it several times, (with a chicken stick, remember) will usually spit out enough fuel so that it can start.
- Cold air is much denser than warm air, so your summertime mixture setting will probably be too lean. You may need to turn

the needle valve out  $1/8$  to  $1/4$  turn.

- Batteries will not store as much electricity when they are cold as when warm. If you have marginal batteries in warm weather, don't use them for cold weather flying. Get some new ones. Flying with marginal batteries in warm weather is stupid; it is absolute suicide in cold weather.
- If you use castor oil in your fuel, be prepared for a real gooey mess to clean off the airplane after you are done flying. Synthetic fuel stays thin and cleans off much easier.
- Bring along a snow shovel to dig your car out of the snow.
- Speaking of snow, if there is more than just a dusting of this nasty stuff on the ground, you will have to trade in the wheels for either skis or floats. Wheels just don't cut it in several inches of snow.
- Floats work great on the snow, but you probably should give the rudder some added throw. Without a steerable wheel, turning on the ground is very slow, especially if there is much of a wind.
- Bring a thermos of hot chocolate or hot coffee to warm your belly.
- A hot glow plug battery is a necessity too. If it will just barely light a plug indoors, it is totally useless outside when it is cold.
- Some pilots use "bags" made out of quilted nylon to put their transmitters in, (and hands) to keep things warmer. They do provide a certain amount of additional comfort, but their weight also presses down on your thumbs on the sticks and creates some physical interference. →

## Need Articles for your Club's Newsletter?

In the Archives section of the *AMA Insider* Web site you will find every issue of the *National Newsletter/Insider* published since 2003! It's a great resource for construction, safety, and how-to articles as well as hints, jokes, and cartoons all for you to use in your club newsletter!

Visit the newsletter archives online at  
[www.modelaircraft.org/insider](http://www.modelaircraft.org/insider)

# TAG, AMA Has It

Do you want to introduce model aviation to your friends and neighbors and receive local recognition and financial benefits in return? If you answered "yes," then you'll want to know more about AMA's Take off And Grow (TAG) program.

Developed to encourage our members and clubs to promote modeling as a positive recreational activity to those in their communities, TAG was the first of several new programs implemented by AMA in 2007. Intended primarily to indoctrinate and welcome the general public to our hobby, TAG basically provides a one-day extensive introduction of model aviation with the intent of drawing new people into our hobby. This is followed by a flight training program for new members gained from the opening-day activities.

Here's how TAG works: clubs applying to host a TAG Model Aviation Day will be provided with a complete program "requirements and guidelines" document to use as a guide. This document will include ideas on pre-promoting and advertising your event as well as an outline of possible activities to take place during the actual day of the event. Clubs will be encouraged to preregister attendees to help them better prepare. Each attendee will also be entered into the AMA's newly revised Introductory Pilot Program (IPP). Although there is no cost to the non-member, by becoming an IPP student, he or she will be covered under the AMA's liability protection as long as he or she is working under the supervision of an AMA Introductory Pilot (IP) Instructor.

On the actual day of the event, each attendee will be provided with brief "classroom instruction" to help familiarize them with model aviation and to give them an idea of what to expect. Next, each attendee will receive hands-on training under the supervision of a club instructor that will help them become acclimated to the basics of flight and how it all works. If the training involves radio-controlled aircraft, each

please see  
**TAG, AMA Has It**

... on page 7

## Give Me Exponential Rates continued from page 4

There is only one caveat I know of, if you have a Futaba radio, make sure to dial in your exponential rates as a negative number. All other radios use positive numbers when setting up expo rates.

I would start by static checking your control throws after you dial in some expo. Start with your ailerons and dial in about 30% expo for channel one. Now watch your aileron control throws as you move your stick on the radio. You will notice a soft, easy movement while you are at the center of the stick and as you move the stick to full left or right, the controls will begin to move faster to their current end-point setup. This will make your aileron response much more soft at the center of the stick and you will be doing full, slow rolls all across the field. When you need some quick aileron for a quick correction or faster aileron roll, you will still have the throw you need when

the stick gets to its extreme position. It will make your flying much smoother. If you are using the newer faster servos, you will see much more effect by using expo rates.

So how does Matt have his radio set up? There is no exact formula, but this may give you a place to start:

My expo setting on my Composite ARF 330S for precision non-3-D flying are below. Keep in mind I have a lot of throw in my control surfaces even on low rates, so you will want to experiment and find the best settings for your aircraft. (Note: I'm using a Futaba radio, so these numbers are listed as negative. For other radios—JR, Airtronics, etc.—you would dial in positive numbers.)

**Aileron:** -50% (left and right)

**Elevator:** -40% (up) -20% (down)

**Throttle:** -38% (this smoothes out the throttle response across the whole stick

movement)

**Rudder:** -80% (left and right)

If you are skeptical, start with lower numbers, 0% would equal no exponential at all. Try a different setting after each flight and get to a point where you see your flying get smoother.

You have heard all the top aerobatic pilots' names: Frazer Biggs, Quique Somenzini, Mark Leseberg, Christophe Paysant-LeRoux, Chip Hyde, Mike McConville, Bill Hempel, Kenny Lauter, Jason Noll, Jason Schulman, etc. I'm not even in the same league as these pilots, but guess what all these pilots have in common? Yep, they all make heavy use of exponential rates when setting up their radios.

So pull out that radio manual and start dialing up that expo! You will be glad you did and your friends will be asking you what you did to improve your flying. →

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

## Battery Shorts, How They Occur

by Red Scholefield



A short develops in a NiCd when conductive particulates bridge the separator or the separator itself deteriorates to the point where it allows the negative and positive plates to touch. Rarely does the short occur all at once but rather building up a very small conductance path termed "soft shorts."

In a charged cell the energy in the cell will blow away any short as it tries to develop. You've heard about "zapping"

cells. The cell actually zaps itself before the short can develop. Only in cases of severe overcharge at high rates when the cells heat up significantly, can the separator melt down to the point where the plates contact each other (hard short). In this case the energy in the cell then dumps and we have what is referred to as a hot steamer, the electrolyte boils, nylon in the separator melts down and is forced by the steam through the vent.

On some occasions the vent is clogged by the molten nylon separator and becomes inoperative causing the cell to rapidly disassemble. So under normal circumstances a cell maintained at some state of charge is much less likely to short than a cell that is completely discharged.

It should be noted however, that the self-discharge increases rapidly in cells where there is a short building (high resistance-soft short) because of separator deterioration and/or cadmium migration. One other shorting mechanism is a manufacturing defect where the positive or negative collector tab bridges the opposite plate. These usually fall out before the cells are shipped or assembled into batteries. →

## When You Can't Go Outside

continued from page 1

getting them to stand upright on the ground. If you can find targets of different sizes, you can create a point scale for each one. A similar type activity could be played with a limbo bar.

### Building/Education Workshops

Is there a Boy Scout troop or other kids club in your area? Introducing them to the sport of model aviation can be rewarding for both your club and the youngster. Consider holding a modeling workshop for youth in your area. This could be as simple as inviting a group to attend one of your club meetings.

The AMA Cub (Delta Dart) or AMA Racer are great beginner models perfect for youth just being introduced to the hobby. Both are available through the AMA's "Shop AMA" link: [www.modelaircraft.org/shopama.aspx](http://www.modelaircraft.org/shopama.aspx). The AMA Cub can even be ordered in bulk or by the dozen to accommodate larger groups.

### Show and Tell

The cold season is a great time for modelers to begin new projects. Why not hold a Show-and-Tell Day for your club? It's a great way for modelers to toot their own horn a bit and even get a few compliments on their work.

Jazz up a plain old Show-and-Tell by incorporating a contest. Maybe ask members to take a silent vote on which project they liked best. →

## Tips & Tricks

### Balsa Dents

When you accidentally dent a piece of balsa during construction of a model, try this old cabinet-maker's trick. Put a few drops of white vinegar on it instead of using filler. The vinegar will pull 99% of the dent out. Works best overnight. Try it; it really works!

### Construction Tip

When taking an airplane apart for repair, put all the parts into a clear freezer bag with the name printed on the outside. This will save time in looking for the parts needed, as the airplane repairs are being completed. Some freezer bags have a spot for the name to be printed on and, if you put in a piece of the airplane's MonoKote, this will speed up the ID.

—both from the *Woodland Aero Modelers, Downers Grove, Illinois*

### Servo Connectors

To hold your radio/servo connectors together, use a piece of thin string or dental floss and wrap it around the connectors, looping it through the wires so it pulls the two connectors together. Use a nonslip knot to tie the string so it does not come untied. Don't let an unplugged connector cost you a crash.

### Antenna

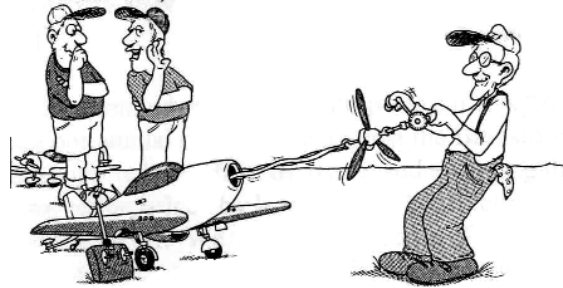
When collapsing your transmitter antenna make sure to grab the bottom of each section and pull down. Pushing from the top can easily bend the antenna.

—both from the *Privateers, Mills, Wyoming*

From the 1995 Warped Wings Calendar by Bob Zimmerman

## Cartoons

"Old Elmer is positive there's going to be a model fuel shortage, and he wants to be ready for it!"



## TAG, AMA Has It continued from page 5

attendee will be given the opportunity to fly a trainer model on a buddy box under the guidance of an AMA IP Instructor. Time permitting, multiple flights are encouraged.

If your club is selected to host a TAG Model Aviation Day, the AMA will provide up to \$1,000 in advance to use to set up your program. At the end of the event, items purchased are your club's to keep as AMA's way of saying "thanks for helping out." Through TAG, individual AMA members can also take advantage of AMA's Ambassador Program. Sign up three new Open or Senior members with AMA, and a current member will earn next year's membership as another way of saying thanks.

Remember, too, the rewards are more than just the things listed above. Hosting a TAG Model Aviation Day is a great way to reach out to your community to give it a taste of a family-oriented recreational activity that we all enjoy so much. In addition, you'll be creating positive relationships with your neighbors that quite often can help when the time comes to keep or acquire new flying sites.

As with all of our developing programs, the AMA wants to provide the tools local clubs need to ensure the popularity of their hobby. It will require the cooperation of many to make it a success. Achieving that success will make our already wonderful hobby even better.

Interested? AMA has a limited number of openings for 2009. If your club would like to partner with AMA to promote model aviation and open the door to growing your membership, contact us at (765) 287-1256, extension 516 and an application package will be sent to you promptly.

Or visit the TAG Links page to download a complete syllabus and application. Model aviation is a great hobby. Let's tell others about it!

The TAG Program is available to Free Flight and Control Line clubs as well.

For more information contact: April Hathaway at [aprilh@modelaircraft.org](mailto:aprilh@modelaircraft.org), or (765) 287-1256, extension 516 or Jack Frost [education@modelaircraft.org](mailto:education@modelaircraft.org), (765) 287-1256, extension 515. →

## AMA Vision

We, the members of the Academy of Model Aeronautics, are the pathway to the future of aeromodeling and are committed to making modeling the foremost sport/hobby in the world.

This vision is accomplished through:

- Affiliation with its valued associates, the modeling industry and governments.
- A process of continuous improvement.
- A commitment to leadership, quality, education and scientific/technical development.
- A safe, secure, enjoyable modeling environment.

## AMA Mission

The Academy of Model Aeronautics is a world-class association of modelers organized for the purpose of promotion, development, education, advancement, and safeguarding of modeling activities. The Academy provides leadership, organization, competition, communication, protection, representation, recognition, education and scientific/technical development to modelers.

### ABOUT THE *AMA INSIDER*:

The Academy of Model Aeronautics' *AMA INSIDER* is published electronically on a bimonthly basis for members of the Academy of Model Aeronautics. Its purpose is to create a network of information exchange between the Academy of Model Aeronautics-chartered clubs as well as the Academy of Model Aeronautics officials and chartered clubs.

The newsletter's contents are collected from Academy of Model Aeronautics club newsletters and various other sources within and outside of the organization. Implicit consent to reprint articles found in club newsletters is given whereupon the newsletter editor completed and returned the Club Newsletter Exchange form or initiated contact with the Academy of Model Aeronautics by sending a newsletter, either via mail or E-mail, to the newsletter editor.

Articles or links to outside Web sites reprinted in the newsletter do not necessarily reflect the opinion of the Academy of Model Aeronautics nor are these articles or links intended to be endorsements of particular products.

Every effort is made to ensure that the information contained herein is accurate; however the Academy of Model Aeronautics is not responsible for errors or omissions. All articles are assumed to be original works authored by club members unless otherwise noted in the *AMA INSIDER*. On such noted occasions, the Academy of Model Aeronautics has been granted permission to reprint the copyrighted material.

No responsibility is assumed, expressed, or implied by the Academy of Model Aeronautics as to suitability, safety, or approval of any material in this newsletter. Any person attempting an action described herein does so at his/her own risk without recourse against the Academy of Model Aeronautics.

Permission is granted to redistribute material found herein given that proper attribution accompanies the article. Proper attribution is defined as the original author's name and title (if given) and the name of the originating club or organization. In the event that an original author is unknown, the editor of the newsletter is a suitable substitution.

The Academy of Model Aeronautics reserves the right, in sole discretion, to edit or reject any material submitted for publication.

### CONTACT US

We welcome your comments and suggestions about the *AMA INSIDER*. Please send them to:

#### Newsletter Editor:

Ashley Rauen, ashleyr@modelaircraft.org  
(765) 287-1256, ext. 228

#### Technical Editor:

Ed McCollough, vpxi@pacifier.com

#### Director of Publications:

Rob Kurek, rkurek@modelaircraft.org  
(765) 287-1256, ext. 220

### SUBMISSIONS

If you are a member of an AMA charter club and would like to submit your newsletter or an article for consideration. Please send it to us via E-mail or postal mail.

#### E-mail:

We will accept your newsletter in PDF form or as a word document attached to an E-mail. Please send the E-mail to:

[ashleyr@modelaircraft.org](mailto:ashleyr@modelaircraft.org)

#### Postal Mail:

Hard copies of your newsletter can be sent to AMA Headquarters. Please mail to:

**AMA Newsletter Editor**  
**5161 E. Memorial Dr.**  
**Muncie IN 47302**

\*The Academy of Model Aeronautics reserves the right, in sole discretion, to edit or reject any material submitted for publication.

\*All reprinted articles become the property of the Academy of Model Aeronautics.



[www.modelaircraft.org](http://www.modelaircraft.org)  
Tel.: [765] 287-1256 | Fax: [765] 289-4248