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NATIONAL NEWSLETTER

NOVEMBER 2003

FOR WHAT IT'S WORTH: Sharing my flying field experience

By HAROLD J. HARRISON

I would like to share an experience at the field in the hope that some of you might benefit from it.

Saturday, July 5: The weather was clear but hot, humid, and breezy (maybe a 20 mph wind).

I arrived at the field just before noon, and there were still about five or six guys from an earlier crowd with their airplanes on the flightline. Some of them were sitting in chairs under umbrellas.

I got my trusty, modified stick ready to fly. I have been flying this 50-inch wingspan, .46-cubic-inch, two-stroke engine airplane for almost 10 years and know pretty much what it can and cannot do.

Lately, the engine hasn't been responding very well in the low range, choosing to quit, especially in hot and humid weather. Adjusting high and low needle valve settings and changing the plug did not seem to help much. On this day I changed from a 10-8 to a 10-7 pitch propeller to see if unloading the engine a little might help.

While I was changing the propeller, fueling up, and getting ready, the wind became noticeably stronger. One umbrella blew over, and my chair nearly collapsed. But I wasn't worried; I had flown in windy conditions many times before. The airplane had good penetration with its low frontal and side areas.

With the radio on, engine running, full throttle holding nose up, slight

needle adjustment for a different propeller, and good transition from low to high throttle, everything looked good.

The airplane was a little slow taking off. There was a crosswind over the field at about 45°, coming from the west and blowing toward the flightline. In the air, the airplane handled about the same, not much different even with the propeller change.

After flying around for about five minutes, being careful not to throttle back until I was ready to land, the engine quit suddenly at high rpm while heading west, which it had never done

before. It wasn't a bad position, but not very high and about one third of the way in from the west end of the field and beyond the north

edge of the field.

It should have been simple—nose down, a shallow 180° turn and back onto the field—only it didn't work that way. By the time the 180 was completed, the wind had blown the airplane way downwind in the direction of the flightline. In the turn, the flying surfaces were exposed to the wind, leaving a bigger area for the wind to push against.

After the turn, the wings were straight and level. Rudder input was unable to make the airplane turn. It just would not turn and continued in a direct line toward the parked airplanes and the guys in the chairs. All I could do was yell, "Headache! Headache!"

In the real airplane world, this attitude has a name: complacency. Watch out! It can reach out and bite you.

continued on page 2

and hope for the best.

Here is what happens. Going downwind with a dead engine, your ground speed might be 20-30 mph, but your airplane (relative to the wind it is flying in) might only be 5-10 mph. A rudder deflection at low speed will not give the desired response; in fact, it will give just the opposite.

To illustrate this phenomenon, take the venerable Piper J5 Cub or any full-scale tail dragger. When taxiing downwind, you push the stick forward, deflecting the elevator down. Normally this would raise the tail, but since there isn't enough propeller wash over the surfaces for this to happen, the wind blowing from behind will push down

on the exposed upper surface of the elevator, pushing the tail wheel firmly on the ground. Reverse this and see what happens. Elevator up normally pushes the tail down, but the wind will now push on the exposed bottom surface and lift the tail up off the ground, causing unwanted damage up front. So when flying downwind with a dead engine, don't be surprised if you find you have no control over your airplane.

Fortunately, I was first in line on the flightline from this direction, and the airplane hit my starting stand, stopping it dead. You remember my safety starting stand? I wrote an article about it a couple years ago extolling the virtue of having one. Don't laugh. Now there is another good reason to have one—

they make great airplane stoppers.

Everything stopped except the engine, which rolled up to Ed Moore sitting in his chair. He said, "Here," and I said, "What's this?" He replied, "It's your engine." The propeller wasn't even broken!

What should I have done? I simply should have kept the airplane into the wind, nose down, and headed for the tall grass.

In the real airplane world this attitude has a name. It is called complacency. Watch out; it can reach out and bite you.

from *Hear Ye!*
Valley Forge Signal Seekers
Marilyn Ayers, editor
Glen Mills PA

How to adjust a two-needle carburetor

By PAUL GEDERS

Typically, carburetors come from the factory close to being pre-set. If you have torn down your carburetor for a thorough cleaning and examination or you just want it to run right, here's a good starting point.

With the throttle barrel in the full open position, close the high-speed needle until it stops. Then, back it out three turns. Now, with the throttle barrel almost closed, do the same thing with the idle mixture screw. This is your baseline.

Some carburetors have a throttle stop screw. Usually we set these so the

air hole in the carburetor barrel completely closes off against the stop screw. This is so we can shut the engine off at full low throttle trim. When adjusting some idle mixture screws, the carburetor barrel wants to rotate and get pushed inward, making it a little difficult to get a good setting. All you have to do is lock the throttle arm so it cannot rotate or go in while you are adjusting the idle mixture screw.

Here are 10 easy steps for setting up almost any two-needle carburetor:

1. Start the engine and go to full power.
2. Set the high-speed needle to

maximum power and back off about 1/4 to 1/2 turn.

3. Go back to as low an idle as you can achieve.

4. Turn the idle mixture screw until the engine stops. While the engine is off, back the idle screw out 1/2 to 3/4 turn.

5. Restart the engine at idle.

6. The engine should be idling pretty well.

7. Reset the high-speed needle to maximum rpm and back off 200-300 rpm.

8. Return to idle and let the engine idle for about 15 seconds.

9. Quickly move the throttle to full power and listen to the transition from idle to full power. If it instantly goes to full power, you are finished.

10. If it hesitates or sags a little, it is still too lean. Back out just 1/4 turn. Repeat step 9.

When you are finished, at about 1/2 trim setting, you should be getting a good fast idle at high throttle trim. You should be able to shut the engine off at full low idle trim. That's all there is to it!

from *Flight Lines*
Spirits of St. Louis R/C Flying Club
Walt Wilson, editor
St. Charles MO

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Hints from the workshop

By BOB FURR

This is a collection of things that have made life easier for me while working on both models and home repairs in my shop.

Makeshift clamps

I tend to use a lot of “white glue” (regular Elmers) or “yellow glue” (Sig Bond). To work right, things glued with slow setting water-based glues need to be clamped. A caulk gun is ideal for applying light pressure to small pieces. Place the work between pieces of scrap wood and then position the assembly between the jaws of the gun. The scraps of wood protect the work and provide a flat surface for even pressure. To apply pressure to the work, just squeeze the trigger.

Clamping: Curved or irregular pieces

At times I have had oddly shaped objects to glue together. The worst may have been a set of pre-molded wheel pants. They didn't have a flat surface anywhere so I couldn't attach clamps. As I looked around the house, my dog tried to get my attention with one of those foam balls that you get for less than a dollar in pet stores. It isn't easy to hold curved or irregular pieces tightly in a clamp.

An ordinary soft rubber ball can provide a good way around this problem. Cut off a piece of the ball to create a flat area and glue a film canister cap to the opposite side. Place the cut side of the ball against the work piece and the clamp head in the film cap. Clamp the ball and work piece in place. The ball conforms to fit any shape and won't scratch the work.

Woodworking safety tips

Always keep a clean shop. A cluttered shop is an accident waiting to happen. Keeping your shop clean will protect you and your tools. Avoid distractions and pay attention to your actions. Looking up to watch TV or talking to a visitor could result in your hand contacting the blade so always wait until you have completed your cut before you take your eyes off the blade.

Never get in a hurry and keep in mind that what you are doing is a hobby. Take a break when you feel rushed or frustrated with a project. Mistakes happen when you rush to get your project completed. I use things like push sticks, ear muffs, and safety glasses every time I am in my shop. My uncle was a model maker for the US government for years. By the time he retired, he had lost parts of fingers on both hands. It's not worth an injury!

Bevel sawing (angle cuts)

Sometimes people have to splice two or more pieces of wood together for a spar or leading edge. When that is done as a simple end-to-end glue joint, it creates a weak point in the wing that almost always is the first place to break. Cutting the ends to be joined at an angle before joining provides more gluing area and spreads the stress out, resulting in a stronger joint. In passenger aircraft, the FAA requires a seven to one splice. Boat builders use 10 to one or more. Any angle is better, and here is an easy way to get some additional gluing area.

Bevel sawing on a scroll saw, band saw, or table saw involves any kind of work in which the table is intentionally set so that it is not perfectly square to the blade. The result is a vertically slanted cut surface, whether the table is adjusted a full 45° or merely clamped 1° from a true perpendicular plane. The result will be a beveled cut. With my scroll saw, I can easily get 45°. That gives me almost half again more gluing surface and an extra margin of strength.

Before applying the finish

I have been using polyurethane paint on my sport and stunt models for a number of years. It gives a fuelproof finish at least as good as most dope finishes and looks acceptable in two coats. It does have a few problems. One is that it dries slowly in cool weather. Another is that it is far more sensitive to things like a very small amount of castor oil or even some hand lotions. At times it will just not completely dry because of the oils on the wood or on the first coat of paint.

Your hands secrete natural oils that can mark unfinished wood. To protect your work, rub sawdust between your hands before handling your work. The sawdust will draw out and absorb the excess oil. Also, prior to finishing a work piece, remove pencil marks, dirt smudges, grease and oil spots, and wood dust. Wipe your work with denatured alcohol. Alcohol is an effective cleanser and will not raise the grain. Because alcohol can be absorbed through your skin, wear rubber gloves.

Power tool safety

With the new table saw we purchased last year, I became far more careful. This tool has the ability to rip through a 4 x 4 or hardwood in seconds. That's a lot of power. In the interest of safety, you should always unplug your power tools when you are not using them. This also applies if you have to adjust them or clean them.

Since my kids and their friends are still young, I realized just unplugging was not quite enough. To keep a young child from plugging in one of your power tools, insert an ordinary key ring through the hole in a plug prong. (If you have older children they might figure this out, but you can always insert a mini padlock through the plug prong.)

Note from the Orbiting Eagles Newsletter editor: On this all-important issue of power tool safety, I add this shop policy. In my home, my wife and children were taught never to enter the workshop when a power tool was running. Distraction is a major cause of power tool injuries. Someone entering a workshop while you are using power equipment can easily result in a distraction. When the power tool stops, give a verbal warning, such as “Coming down.” How many times has someone approached you silently, causing you to jump through your skin when they spoke? Always practice safety first!

from *Orbiting Eagles Newsletter*
Orbiting Eagles Control Line Club
N.F. Sheltraw, editor
Omaha NE

The SUV of field boxes

By DAN ROSENTHAL

It's been a year and a half since I completed my Great Planes Field Box with Auxiliary Power Station. I was mighty proud of that MonoKote job. It was heavy, however, and despite its several nooks and crannies for storing things like glow plugs, wrenches, and a few propellers, it left something to be desired for more storage space. I occasionally yearned for something else to use as a field box but did not know how to proceed. Then, one day when I was at the field, one of our club members showed up with something so new, so exciting, that it would soon revolutionize this very hobby! Well ... maybe.

The member had a large plastic toolbox that he pulled behind him. It was comprised of two boxes that fit neatly, one on top of the other. The bottom box rolled on two large wheels, and the top box had a folding handle so he could pull the whole assembly. This product was the mighty Black and Decker Mastercart. He bought it at Home Depot for \$30. It wasn't very pretty ... just orange and black plastic. I cautiously moved a bit closer to further inspect this oddity.

The top of the upper box has two plastic lids and when opened, they reveal an assortment of small compartments. These are perfect for storing glow plugs, a tach, and a bunch of small instruments that normally rattle around in one of the few, large compartments of a field box. Furthermore, the top box has (in the front) a removable storage case with adjustable compartments. It resembles a small fishing tackle tray. The more I explored, the better things looked.

Each of the two large boxes that made up this behemoth could be opened just like a conventional toolbox to reveal a large, plastic orange tray. When the tray is removed from its respective home via its handle, one beholds a cavernous space! That's right ... two large boxes, two orange trays, and two gargantuan compartments. I know, I know, you are itchin' to get past all of my colorful adjectives to find out more! Is there more? Well, no, that's it.

Did I rush out and buy one that summer? Nope. I insisted on carrying my "pride and joy" around for another year. Well, that pride and joy slowly became a pain. It was heavy, not large enough, and every so often, I had to re-iron that MonoKote. My box was flashy, but not very practical, and I dreaded the occasional scratch! It was like driving a Ferrari around. The Mastercart that Lee brought is more like a HumVee. It is big and burly, and who cares if it gets nicked? Finally this summer, I went to Home Depot, picked one up, and dove right into the conversion from Italian super sports car to American-made brute. It took all of one hour!

There were only a handful of steps to complete. First I cut out a square for my power panel in the top box and squished the battery between some pieces of foam. Then I screwed my hand pump to the bottom box and

**One day at the flying field,
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drilled two holes for the fuel tubing. Had I used a conventional one-gallon jug in my Mastercart, I would have had to cut out a part of the tray that fits into the top of the box due to the tall stature of the jug. I looked on RC Universe to see what other people had done to modify this box. On the goofy side, I found threads from people who installed drink holders and even sound systems. Aha! One individual bought Rubbermaid containers that are normally filled with water and placed in the fridge. They had a large opening in the top (perfect for filling), plastic screw-top lids (to which you affix your fueling fittings), and plastic spigots at one end on the bottom to dispense the occasional cool, refreshing drink. I removed the supplied spigot (a swig of 15% Nitro is not all that refreshing) and sealed up the hole with the supplied spigot screw cap and a round piece of plastic that I cut. Silicone

sealant ensured that no leaks would ruin the fun.

A word to the wise: First, I discovered that silicone sealant was a must. Second, testing this fuel jug by filling it with water in the tub would have been just as prudent. If, in your excited haste, you choose not to use silicone, and you pour volatile fuel into your untested fuel jug in the middle of the carpeted living room, then the following will happen. You will discover a precipitous leak, forcing you to hurry to the bathroom, trip over the shower rug, toss your fuel-laden Rubbermaid into the tub, run back to the living room, grab the original fuel jug, sprint back to the bathroom again, pour the remaining fuel from the Rubbermaid back into the original jug, and discover that you recovered only 75% of the fuel while the other 25% formed a clearly defined trail on the carpet from the living room, down the hall, and into the bathroom ending in a puddle. Don't ask me how I know.

Another word to the wise: Do not use the Rubbermaid that I painstakingly converted. This story keeps getting better, doesn't it? As many club members will tell you, not all plastics are the same. That is, not all are fuelproof (or fool-proof, for that matter). After a few days of fuel storage, the plastic became cloudy-looking (the fuel looked normal, however), so I bought a plastic one-gallon gas can and installed it into the bottom box of my HumVee. A call to the fuel manufacturers confirmed this was a safe method of storage.

So, there you have it. The SUV of field boxes is complete, and ready to be packed full of anything and everything I can find a place for. I now carry three times as much stuff to the field as I used to, and I am sure I can fit more. If Martha Stewart were to take up this hobby, she would refer to this Mastercart by saying "It's a good thing" (unless she were to find out about that carpet incident).

from *The KRC Downwind Approach*
Keystone Radio Control Club
Dan Rosenthal, editor
Perkasie PA

Dead-stick landings

By GARY THOMPSON

Superior Pilot: *Def.* A pilot who uses superior judgment to keep himself out of situations that might cause him to have to use his superior flying skills.

Knowing how to make a dead-stick landing can help make you a superior pilot. Some of us think that if you prepare well enough, a dead-stick landing will never happen. But even the best preparation in the world can still allow for this event to happen. All it takes is for your engine to stop just once during flight.

To make the best of this sudden event, you should be well-prepared.

1. Practice for a sudden loss of power. When looking for something to do during your next flight, why not try a few dead-stick landings. Just cut the power back to idle and try to make the runway. Even better, have a helper call dead-stick and then cut to idle. This will introduce a sense of urgency to the drill. Your helper may even get some kicks out of trying to see if he can force you not to make the runway without adding power.

2. At the first sign of a loss of power, head toward yourself. This gives you the maximum amount of altitude and the minimum distance to make the runway or landing area.

3. Keep your altitude when your airplane is distant. Don't fly low and far

away. If you are distant, you will need altitude to trade for speed in order to make the runway.

4. Use a timer. If you prudently set a timer to time out when you have used no more than 75% of your tank, you will be able to more easily determine when your gas supply will run out. Electric fliers have a leg up here because they automatically receive a warning when the batteries begin to lose power.

5. Watch your speed and altitude. Without power (dead-stick), the only way to gain flying speed is to dive. If the airplane stalls, it may lose all of its altitude at once.

6. Pay attention to ground speed. You can cover more ground going downwind than up. When dead-stick and turning into the wind, you will lose a lot of ground speed, so make your final turn short, or if you can't make the turn, land downwind.

7. Set up your tank clunk. Make sure the fuel pickup clunk is not touching the back of your fuel tank. Set it up so that the fuel pickup is free to move from the bottom to the top.

Now go fly right and practice a few dead-stick landings.

from *Transmitter*
Palomar RC Flyers
San Marcos CA

TIP TIME Shave can caps

If you use canned shave cream, keep the caps from the used cans. The plastic caps make great containers for mixing resins. Several ounces can be mixed inside, enough to join wings or other fiberglass projects. Or, turn the cap over and use the flat top to mix up just a bit of epoxy for a small job. Usually, the excess can be popped off the cap when cured. I use a piece of scrap balsa, cut to a point, to mix and apply resin, or a throw-away brush for "glass" work. Leave the balsa or brush in the leftovers and use that as a handle to pop the cured resin out of the cap. Each cap can be used several times.

from *The Barnstormer*
Hemet Model Master
Chris Wdowiak, editor
San Jacinto CA

Keep this in mind

By SCOTT RHOADES

Have you ever visited another flying field as an observer? If so, I bet you've had an experience similar to some that I've had.

Here's the scenario. I'm behind the fence in the spectator area, observing a dozen plus pilots doing exactly what we do at our field: fly, fix, and gab. However, the fence might as well be a one-way mirror. I can see them, but they can't see me. Not much different than a zoo exhibit where the animals are oblivious to spectators.

After a lengthy visit where I got as much attention as the fence I was leaning against, I left without making eye contact with a single member. Sure, I could have initiated contact and likely had some pleasant conversations, but after a certain point of going unnoticed, speaking to a member would have been similar to throwing rocks at the zoo animals to get their attention.

I've visited a few clubs over the years and this scenario has happened more than once. The times I did have a member initiate conversation, it was typically with only one person while the others remained in their "cliques." I don't think I need to describe my impressions of clubs that don't acknowledge their visitors.

Thinking of the friendly nature of our many members, I doubt any visitor near the action would get away without chatting with a member. But I believe it's important to remain conscious of visitors and make them feel welcome. I want like to encourage everyone to introduce him or herself to an unfamiliar face. On occasions when people only pull halfway down the drive to observe, be sure to give a friendly wave.

Doing what we can to be perceived as a "friendly" club could reap many benefits. You never know when a visitor could be the chief state park ranger or our future club president.

from the newsletter of the
Holly Cloud Hoppers
Scott Rhoades, editor
Holly MI

THE LAST WORD: Something to think about

By WALT WILSON

In most clubs, virtually all the work necessary to keep the organization going is done by a small percentage of the membership. The Spirits of St. Louis are no different. Whether it's cutting grass, being field chairperson, activities chairperson, a contest director, a board of directors member, maintaining a club Web site, or being president, treasurer, secretary, or newsletter editor, we are all volunteers. The pay scale is the same—zip.

Most members who have never been involved in any of these jobs have no appreciation of the effort that goes into doing them. Many club members have no idea who does what for the club. Some seem to think it all happens

automatically and, since they've paid their dues, they're entitled to a free ride in all other aspects.

The people who recognize and assume the responsibilities do so for a variety of reasons. Most want to do something to feel like they're doing their share to support the club. Some have unique skills that enable them to make special contributions. As long as the volunteers do their jobs, the people who recognize what they're doing appreciate and occasionally thank them.

Whatever the reason, eventually the workers feel it is time to move on and let someone else carry the ball for a while. Maybe they're burned out, tired, have developed physical problems, or have family or business responsibilities that precludes donating the time

necessary to do a club job. Maybe they feel they've done enough. Eventually, all will quit doing whatever they do. If you don't think that being a club officer takes its toll on time and patience, think about how many past presidents are still active members of the club. Of those who are, how many are willing to be president or hold another office?

Appreciate the people who spend their time making your club work. Pat them on the back occasionally. Don't resent them when they quit doing it. Ask yourself if you would have done that job.

from *Flight Lines*

Spirits of St. Louis R/C Flying Club
Walt Wilson, editor
St. Charles MO

Winging it

Here are some rules for flyboys and flygirls:

When in doubt, hold on to your altitude. No one has ever collided with the sky.

The propeller is just a big fan in front of the airplane used to keep the pilot cool. When it stops, you can actually watch the pilot start sweating.

The only time you have too much fuel is when you're on fire.

Stay out of the clouds. The silver lining everyone is talking about might just be another airplane traveling in the other direction.

You start out with a bag full of luck and an empty bag of experience. The trick is to fill the bag of experience before emptying the bag of luck.

There are three simple rules for making smooth landings. Unfortunately, no one knows what they are.

from *Ruf Stuf*
Green Bay Model Airplane Club
Jim Sanders, editor
Green Bay WI

Hints and tips for beginners

1. Roll test steering in a driveway or basement. If it doesn't roll straight at home, it won't roll straight on a runway. Set control to the least sensitive position.

2. Put MonoKote (or other) small marks at the center of gravity on the wing to indicate balance location. It makes it easier to check at the field.

3. Balancing laterally (side to side) will help aircraft track better in maneuvers. Hold at the spinner and tail. Add wingtip weight as necessary.

4. Check receiver battery every two or three flights. Make a chart of how long you have flown versus voltage drop. Do not operate below 4.9 volts.

5. Always turn on your transmitter first and receiver second. Always turn off your receiver first and transmitter second.

6. Range check your system before the first flight each time out. This should be performed with the engine running at both idle and full throttle.

7. When using the buddy box system, make sure both boxes are set

identically. Never turn the buddy box power "on."

8. Remove transmitter neck straps when starting engines.

9. If you don't have a starter, at least use a "chicken stick." Do not hit against the propeller; start your flip with the stick next to (touching) it.

10. Never jam a running starter onto the spinner. Back up the propeller and place the starter cone against the spinner before turning it on.

11. When you start your engine, look at your watch and keep track of time. After your flight, check the fuel level to judge maximum available flight time.

12. Do not reach over the propeller to adjust the needle valve. Do it from the rear. Do not position yourself or others to the side of a rotating blade. It could fail on run-up or kick up debris.

from *Fly Paper*
via the newsletter of the
Orange Coast Radio Control Club
Betty Bliss, editor
Whittier CA

The Jenny Craig Plan for Control Line models

By FLOYD CARTER

It's instructive to follow trends in model airplane design, especially in Control Line (CL) Precision Aerobatics.

You may have observed that many modern CL stunters depend on brute horsepower and generous wing flap and elevator areas to make good corners, and this seems to be the latest thinking. Higher wing loading on these models, instead of degrading performance, seems to promote smoother maneuvers and less susceptibility to upset in the wind. In fact, at the 2002 Nats the average stunter had a wing loading of more than 13 ounces per square foot and empty weights well over 60 ounces. Gone are the days of Fox 35 powered stunters in national competition. Most expert flyers run .60 engines with tuned pipes for even more power!

The old bugaboo of the rulebook, 5-foot radius corners seem to have gone by the wayside, with the judges ignoring big sloppy corners in modern stunt competition. (You might remember that recent experiments using a video camera have been

performed measuring top flyers, and graphic analysis of the tapes shows their corners are nowhere near the 5-foot radius.) Such modern stunters were designed with numbers that seem to permit a flying weight a bit on the "porky" side.

If you are thinking of building an OTS or a Classic-era ship with .35 or similar power, or even one of the many entry-level kit airplanes, ignoring all-up weight could leave you with a model of much less performance than possible. Just how heavy is too heavy? There is no good rule because each design is different. Perhaps the best answer is if it is possible to take off more weight by changing the internal construction or by selecting lighter materials, then the airplane is too heavy.

How do you look at a set of plans or inside a kit box and decide what to do to reduce the weight? If you construct a stock kit, it is not going to come in light. Changes to construction or purchasing lighter wood for a kit model are hard to do because of the tendency to "leave well enough alone." Scratch builders have more opportunity and incentive to select light wood and

the proper wood for the job. Probably only about a quarter of the wood in a hobby shop is suitable for a CL model. The rest of it is reserved for Radio Control. Mail-order suppliers are sensitive to your wants if you call them and explain the sizes of a four- to six-pound, A- or C-grain sheets you need. There is usually a 10% surcharge for selected wood, but it is worth it.

Don't overlook details, such as wheels and landing gear. These represent dead weight, and there is no excuse to not use light wheels. Carbon fiber accessories, silkspan tissue, using clear instead of heavy coats of paint, and the sparing use of epoxy all contribute to the desired result.

Remember, the difference between a poor flying model and a great one is often a matter of just three or four ounces. Hardly a man breathes who, with just a little effort and planning, could not build an airplane that is three or four ounces lighter.

from *Prop Spinner Chatter*
Eugene Prop Spinners
Mel Marcum, editor
Eugene OR

Airspeed, altitude, and brains

By TOM GRANT JR.

Here is a quick and helpful hint I hope no one ever needs.

I misjudged my aircraft's fuel supply one afternoon. The dead-stick landing was short of any runway. That old saying that it takes two out of the three—airspeed, altitude, and brains—to make a good landing was painfully (thorns and 9-foot high sticker bushes) reaffirmed in my mind that day. My new airplane fell considerably short of the runway, almost in the trees.

After donning jungle combat gear, which had been stored in the trunk of my car, probably as a result of some negative thinking about interactions between the surrounding trees and my recently acquired flying abilities, I headed out empty handed. Another member arrived at that time and volunteered to help.

As we headed out he asked why I wasn't carrying my transmitter. I asked, "Isn't it a bit late to use that piece of gear?" In a fatherly fashion, he told me if I hadn't knocked the battery out of the airplane, I probably could move the servos and aircraft surfaces to generate enough noise to allow us to home in on my airplane. "Why didn't you think of that?" I said to myself.

Well, you can guess the rest of the tale. Everything worked out perfectly. In fact, based on the location of the airplane, really buried in the densest bushes and heaviest underbrush, we would still be looking for it in the year 2004 if not for the racket it was making as I did my stick shaking.

from the newsletter of the
Woodland Aero Modelers
Ken Long, editor
Bolingbrook IL

Words of wisdom

Age doesn't always bring wisdom. Sometimes age comes alone.

Life doesn't just begin at 40; it also begins to show.

Just when I was getting used to yesterday, along came today.

Age is important only if you are cheese or wine.

You don't stop laughing because you grow old; you grow old because you stop laughing.

The easiest way to find something lost is to buy a replacement.

from *Transmitter*
Palomar RC Flyers
San Marcos CA

Tips for balancing your model airplane

By LARRY DUDKOWSKI

One of the more critical aspects of building a model—even an Almost-Ready-to-Fly (ARF)—is the balance. Much of the way your aircraft will perform depends on its balance. Unlike a helicopter that “beats the air into submission,” an airplane is balanced on the air. While it is one of the last things you do when you’re building a model from “sticks” or snapping together an ARF, it is one of the most important.

What happens if your model is out of balance? If the model is unbalanced laterally (wingtip to wingtip), it tends to veer to the heavy side in a climb and its loops will appear to corkscrew toward the heavier side. If the model is nose heavy, higher takeoff and landing speed are required. Tracking is straighter, but there is less sensitivity to elevator and rudder inputs. If a model is too tail heavy, just the opposite happens. While landing and takeoff speeds are lower, the aircraft becomes very sensitive to elevator and rudder inputs. Tail-heavy airplanes become uncontrollable.

The easiest way to check the lateral balance is to rest the model on the tail or tail wheel. Then, loop a piece of string under the propeller shaft. Lift the model, using the string, so the main gear is off the ground. The wingtips should remain level. If they are not level, add some weight to the wing that is light (higher). The further toward the wingtip, the less weight you will need.

Somewhere in your instructions, you should find information on balancing or on how to determine the center of gravity (CG) of your model. This is usually toward the end of the instructions. The CG is typically given as a range dimension and is about a half inch wide. It is generally measured from the leading edge of the wing, usually where the wing meets the fuselage. For example, the CG could be given as 3 to 3¹/₂ inches from the leading edge. The location of the measurement is extremely critical on a tapered wing, such as the one found on an Extra 300 or a Cap 232. It is less important on a constant cord (straight) winged model, such as a trainer. I

balance the aircraft in the center of the balance point. If the CG is 3 to 3¹/₂ inches, I balance at 3¹/₄ inches.

To balance a model, suspend it at the CG points. It should be free to tip forward and backward. Then, add or remove weight to or from the nose or tail until the rear stabilizer is level. Try moving existing weights, such as the receiver and battery, before adding additional weight. If the model is nose heavy, move the battery and receiver toward the back before you add other weight. Remember, the fuel tank must be empty.

I use a Great Planes CG machine to balance my models. Before I had the machine, I supported my model on two full 2-liter bottles. This worked fine on my straight winged trainer. Later I built a balancing stand using two 1/4-inch steel rods glued into wood block bases. I used rubber pencil erasers on the tops of the rods to protect my model. Here are a few more tips:

→ When finding the CG, the fuselage should hang below the balance points. For a high-winged model, lift and support the model from under the main wing. For a low-winged model, balance the model upside down with the fuselage hanging below the supporting structure.

→ When building a kit, try to balance the model before you cover it. That way the covering will hide any additional weight needed inside the structure. On an ARF, try placing the weights under the cowl or inside the fuselage. Again, I try to hide any additional weights.

→ I mark the CG point on my models with a small circle of red and white checkered trim sheet. That way I don’t have to re-measure every time I want to check the CG.

Don’t forget to recheck the CG after any major repair (read “crash” here). This is especially true if repairs are done to the nose or tail.

TIP TIME

Proper method to exit receiver antennas

Never exit the receiver antenna wire to the exterior of the fuselage by running it via the wing saddle, or anywhere near the wing-fuselage joint. The vibration and relative movement between the two during flight will eventually sever the antenna wire.

The proper method is to punch an exit hole in the fuselage, near the receiver location and away from exhaust residue. Obtain heavy sleeving material (the size that will allow the antenna to slide through) from any electronic store. CyA a 3-inch piece of this sleeving in the antenna hole so a half inch or so is inside the fuselage. Pass the antenna wire through the sleeving and attach to the rear of the fuselage. Before you pass the wire through the fuselage, put a strain relief on the wire inside the fuselage to prevent it from being pulled out of the receiver.

The best and cheapest strain reliefs are either a button or a broken off portion of a servo output arm. Simply weave the wire through the holes in the button or servo arm about three times and it’s finished. Make sure you position the strain relief on the antenna wire such that there is some slack antenna inside the fuselage when you are finished.

from *The Fly Paper*
South Bend Radio Control Club
Jack Allinger, editor
South Bend IN

from *Plane Talk*
Prop Masters R/C Club
Dave Masters, editor
Warrenville IL

MAGIC CANS: Every flier needs at least one

By JOE FINKELSTINE

At our first student night this month, I had the opportunity to open and use my magic can. Now, before you all start thinking of snide comments, let me explain a little as many of you also have a magic can or two in your flight boxes.

I have several magic cans in my flight box, and I usually add one per year. Each can is actually an old breath mint can (Altoids in my case) that I fill with all of the little fasteners, fuel lines, clevises, knick-knacks, and other items we all seem to need to fix an airplane for a flight. I started out with one can for everything, but as my flying interests changed and grew, I found myself in need of my first addition. Right after I started to learn more about helicopters, I discovered that they exist in a world heavily dominated by metric. I soon discovered that a magic can for helicopter knick-knacks was needed. Last year, I broke down and added yet a third magic can in my box to handle the overflow from the first can as it was bending the hinges from so much junk ... err, stuff.

This truly hits home at the beginning of each season when I come out to the field only to discover that I took all of my tools out of my flight box during the building/fixing season (a.k.a. winter) and never returned them to their home. Fortunately, I never have forgotten to put my magic can back in

its little home in the bottom drawer of my flight box.

I find myself constantly borrowing tools and advice from fellow fliers at the field and this is part of the fun for me. For most of us instructors who are faced with a student bringing out a new airplane to be flight-tested, the magic can is frequently visited with a set of rummaging fingers.

At the end of this field thrashing, the student always thanks us, but really if you think about it, we are just returning the favor shown to us earlier in our flying careers. I always let my students know that once they take a piece out of my magic can, they incur a debt that must be repaid by starting their own magic can (or they can give me their 120 size Cap 232 as fair payment for a 3 mm screw).

One of my favorite stories about this occurred when I saw a team of instructors completely rebuilding a seized-up two-stroke last year in one student night. Talk about a magic can! I think part of the process involved grinding the head down by raking it over cement. By the end of the student night, though, this seized-up two-stroke was a putting along with its characteristic irritating two-cycle sound.

My personal theory is that the magic cans of some instructors are infinite in content because I have never ever seen them not have something to get a student going. Unfortunately for me, my magic cans are much more

mundane, as I only have an old glow plug and screws of useless pitch to help the cause.

If you have been in this hobby for more than a year or two, you should be well on your way to having a magic can or two, or you just have a drawer full of loose parts flopping around. Heaven forbid you ever throw away a glow plug that you weren't sure was bad.

You will of course need to defend yourself from your spouse or others as to being a pack rat, but hold firm to your belief that the 3.5 mm left-handed thingy you saved from a crash four years ago will be the only thing that works when you have to fix that broken elevator clevis from the last flight.

For you newer fliers, I suggest you look at your potential instructor's magic can to help you gauge his or her experience level. If it is disorganized and full of useless junk (like mine), perhaps you should rethink your choice of instructors. If, however, your instructor's magic can is like the magic bag of tricks that Felix the cat (ask someone older than you who Felix is if you don't know) has, you indeed have made a wise choice.

I hope you leave the field with the same number of pieces you brought!

from *Skywriter*

Skymasters Radio Control Club
Mark Smith, editor
Lake Orion MI

How do you spell relief? N-O

By DAVID NUETZEL

How do we get so much stuff? I'll tell you how. We never say no to the question "Am I going to need this later?" Next thing you know we have a drawer full of stuff, a closet full of stuff, then a garage full of stuff.

Inevitably, we end up asking ourselves "How did I get so much stuff?" Then comes the garbage bag, the brother-in-law's pick-up, or the 30-yard commercial dumpster to take away the stuff you thought you needed one to 10 years ago.

My mother used to call us "pack rats." That's right. I am a recovering pack rat, but I prefer to be known as "NO"-challenged.

Since my move about two years ago when I had to say "NO" more times than I care to remember, I have found it easier to say "NO," but still falter once in a while. I feel safe now that I am past the days of the whimpering "no" through fits of sobbing.

Now for the point of this admission of weakness. During our club's Combat



continued on page 10

Sunday in July, I could feel that my “NO” was strong that day. After passing by the pin box a few times, I realized that there was a lot of extra stuff in our pin box. And I wasn’t the only one who noticed. With my courage up and full of conviction, I said “NO” several times and the stuff was gone. Club members and I had turned what someone thought “might be useful to someone so it was left in the pin box” into what it truly was: garbage and recyclables. They were placed in the back of our vehicles for proper disposal.

Drained of energy and somewhat shaken, I resolved at that moment to help others with the problem that I had recently overcome. Here’s how it goes. Say it out loud if you have to; don’t be shy.

We do not need stuff in our pin box or anywhere else for that matter. The only thing that should be in the box is transmitter pins, transmitters, AMA cards, and recovered items waiting for pick-up. That’s it! No cardboard boxes, mud flaps, plastic bags, string, etc. For those of you who need help saying “NO,” I will give you some help.

NO	NO	NO	NO
NO	NO	NO	NO
NO	NO	NO	NO

Cut out the “NOs” supplied and put them in your wallet. When undecided between what is stuff and what is garbage, whip out your trusty strip of “NOs.” Tear one off and put it with the item, then place them both in a garbage can or recycling bin

It’s a tough road for some of us, so don’t forget to share your strip of “NOs” with a friend in need. This will keep our pin boxes free of stuff. If you remain committed, you may some day be pulling your car into the garage.

from *Ramblings*
 Roxbury Area Modelers Airplane Club
 Michael Ramsey, editor
 Chester NJ

Basic elements of RC aerobatics

By RICHARD LINDBERG

Tired of boring holes in the sky? Are your loops more like nines? Do your rolls resemble curly macaroni? And those straight lines—are they more like crooked arrows? Want some fun? Of course you do!

All Radio Control (RC) maneuvers are comprised of four basic elements: arcs, rolls, straight lines, and stalls. Master these, put them together into interesting, challenging sequences, and watch your fun and enjoyment of RC flying increase.

Here are some definitions to get you started:

- ➔ **Loops:** a series of arcs joined to make a complete circle in the sky
- ➔ **Rolls:** rotations about the longitudinal axis (the line down the middle of your airplane’s fuselage)
- ➔ **Straight lines:** flying straight with wings level and usually parallel to something (such as the runway, the horizon, etc.)
- ➔ **Stalls:** the absence of lift, exemplified by spins, snap rolls, stall turns, and some landings

RC aerobatic flying can be done by anyone who has soloed, flying virtually any type of RC aircraft (even gliders!). Of course, some airplanes can perform complicated maneuvers better than others, just as some people can play sports better than others. But almost all airplanes can do a very credible job of flying the basic maneuvers—takeoffs, stalls, loops, rolls, and landings.

How is this accomplished? Practice, practice, practice. Try this. Next time you are at the flying field, instead of just boring holes in the sky, try to follow a flight plan just like full-scale pilots do. Instead of flying from point to point, try to fly a complete sequence of maneuvers in some order. Don’t worry about what maneuvers, just choose what you can reasonably do, string them together, and fly them. Fly each maneuver as well as you can, but don’t repeat it if you goof up, just go on to the

next one in the sequence. When you’ve finished the sequence, fly it again, and try to improve those maneuvers you didn’t master the first time. When your timer goes off (or you run out of fuel), make as good a landing as you can. I’ll bet you had fun flying that flight! Try it again.

RC Aerobatics is just what you were doing. You follow a formal flight plan, completing each maneuver in sequence, and trying to do the best you can with what you have. There are a number of formal flight plans for Pattern, including Sportsman, Intermediate, Advanced, Masters, and FAI, and for the International Miniature Aerobatic Club, including Basic, Sportsman, Advanced, and Unlimited. Each one is more challenging than its predecessors. For instance, the Sportsman pattern consists of the following maneuvers, in sequence: takeoff, straight flight out, half-reverse Cuban eight, straight flight back, half Cuban eight, two inside loops, two point roll, stall turn, Cobra roll, Immelmann turn, one horizontal roll, split S, double Immelmann (without rolls), and a landing. This sequence can be performed by any pilot with nearly any airplane that is in reasonable trim.

from *The Glitch*
 Albuquerque Radio Control Club
 Callie Johnson, editor
 Albuquerque NM



Custom fiberglass fairings

By RON PETERKA

There have been a number of times where I have needed or wanted some special fairing for a modeling project. No, they weren't always scale projects. There was a time when fuselage to landing gear fairings on a sport aerobatic model seemed to be a good way to dress up the model. Another was to add an air scoop that would cover a protruding control linkage. You may find a use for a quick and fairly easy way to make one off fiberglass fairings that are tougher and longer-lasting than vacuum-formed plastic.

The example I will use is the fuselage-to-wheel pant fairing I recently built for my scale Stinson SR-9. First, you assemble the wheel pants on the landing gear and cover the area on the landing gear and pant where the fairing will touch.

Next, mark the outline of the fairing and the pant using a pencil or fine line felt-tipped pen. This was a teardrop shape to match the full scale version. Mark the tape on the gear leg where the fairing will end.

Now dig up some non-hardening modeling clay from a craft shop or your kid's toy box. Color is optional here. Apply the clay onto the assembly and form it to the exact shape you expect for the fairing. It may help to undersize the clay form slightly to allow for fiberglass build-up later. Make the surface as smooth as possible using any handy tool. I've used Popsicle sticks, spatulas and spoons, and X-Acto knives for this step.

It is important that you are able to remove the fairing after lay-up, so now is the time to either paint the area with Poly Vinyl Alcohol (PVA), available at most plastic shops or wrap the area

with Saran wrap. The PVA is nice because it cleans off with soap and water after you remove the fairing.

I prefer to use satin weave fiberglass because it forms around compound curves so well and leaves a nice surface. Cut enough pieces to make three layers for a lightweight part, more if structural integrity is important.

Here my preference is one-hour epoxy resin, although if you are fast, polyester resin can be used for a quicker result. Mix up a small amount and thin the mix with about 25% isopropyl (rubbing) alcohol. The alcohol must be the 91% strength and can be found in most markets or pharmacies. The fairings for my Stinson used less than two ounces total.

Lay the first layer of fiberglass on the gear/pant and brush on the epoxy using an acid brush to thoroughly soak the glass. Lay on the next two layers and do the same. Remember, the epoxy is just to hold the glass in place and excess epoxy just adds weight without strength.

When the first coat of epoxy has cured, sand the new glass fairing a little to remove the worst of any uneven application and then apply the second coat of epoxy thinned with 10-20% alcohol. When the second coat of epoxy has cured you can remove the pant from the landing gear and the new fairing from the gear leg. Some prying or flexing might be needed here. The fairing still should be quite flexible. Trim the new part, sand, and prime for the finish paint. In my case, the fairing is held in place on the gear leg by the paint. They look great!

from *Transmitter*
Palomar RC Flyers
San Marcos CA

The forgotten rudder

By MARVIN HINTON

Seems like a strange title, right? Well, it's not so strange when you consider the fact that the only time most of us use the rudder is when we are on the ground. The rudder is there for us,

offering its services from the moment we start our takeoff roll to the final taxi back to the pits, yet most of us totally ignore it while in the air.

Our former safety officer once

continued on page 12

On the lighter side

After every flight, pilots fill out a form called a gripe sheet. These sheets convey to the mechanics problems encountered with the aircraft during the flight that need repair or correction. The mechanics correct the problems, and then respond in writing on the lower half of the form what remedial action was taken. The pilots review the gripe sheets before the next flight.

Never let it be said that ground crews and engineers lack a sense of humor.

P=Problem logged by the pilot
S=Solution/action taken by the mechanics

P: Left inside main tire almost needs replacement.
S: Almost replaced left inside tire.

P: Test flight OK, except auto-land very rough.
S: Auto-land not installed on this aircraft.

P: Something loose in cockpit.
S: Something tightened in cockpit.

P: Dead bugs on windshield.
S: Live bugs on backorder.

P: Autopilot in altitude-hold mode produces a 200 feet per minute descent.
S: Cannot reproduce problem on ground.

P: Evidence of leak on right main landing gear.
S: Evidence removed.

P: DME volume unbelievably loud.
S: DME volume set to more believable level.

P: Friction locks cause throttle to stick.
S: That's what they're there for.

P: IFF inoperative.
S: IFF always inoperative in OFF mode.

from *Hear Ye!*
Valley Forge Signal Seekers
Marilyn Ayres, editor
Glen Mills PA

Is epoxy resin or polyester better for glassing?

Which is better for glassing: epoxy resin or polyester? It's a Ford/Chevy and Beta/VHS question?

Both produce sufficiently hard surfaces, but polyester is softer. This makes polyester sandable. Epoxy is harder; therefore, it is more difficult to sand. Wet sanding works best for both types.

There is no difference in weight. Polyester can be spread a little thinner, however, and it is sandable, so less of it tends to remain on the model.

But polyester stinks. It takes weeks for the smell to go away. Epoxy is nearly odor-free. Epoxy favors peace at home.

Polyester cures with a slightly sticky surface. Primer adheres well. Epoxy requires a light scuffing.

Epoxy resin must be mixed exactly. Try this experiment. Mix some epoxy resin precisely and pour it on waxed paper. Now mix some epoxy at 45:55.

Pour it out and let both batches cure. Note that the mismatched batch is softer and has a waxy surface—it didn't cure completely.

Polyester is not fussy about proportions. A variance in the amount of catalyst affects only the setting time.

The catalyst of polyester resin has a short shelf life. Don't use old stuff—it won't cure.

Polyester catalyst is more toxic because it is more concentrated. Always wear latex gloves when working with any kind of resin. For large jobs, wear a respirator and use a window fan.

Don't thin either. Try this experiment. Mix some resin (either one) and pour half of it on a sheet of waxed paper. Dilute the remainder 10% with alcohol or a thinner of your choice. Pour it on waxed paper and let both cure. Observe that the thinned resin is soft, flexible, and it has an oily surface. Thinner resin prevents

complete curing.

Epoxy resin seems to adhere to balsa a little better, but that might vary with conditions.

from *Flare-Out*
Twin City Radio Controllers, Inc.
Jim Cook, editor
Shakopee MN

Rudder, continued from page 11

stated, "On takeoff, the rudder is the first control surface to gain control on acceleration and the last to lose control on landing." Well, most of us have learned that the hard way, during takeoff, landing, and taxiing, but the rudder is capable of a lot more than just keeping our airplanes going in the right direction on the ground, which brings me to the personal side of this article.

I crashed a beautiful biplane recently. I had just brought it out of retirement and it was ready for its initial flight. Knowing that it had a history of bad ground handling, I was very careful on takeoff to apply sufficient rudder to keep it going down the white line of the runway.

The takeoff was accomplished without incident despite low power input from the four-stroke engine. Then, much to my surprise, once airborne, the airplane took a sharp turn to the left, struggling unsuccessfully to gain altitude. Despite full right aileron input, the airplane hadn't enough airspeed to get proper aileron and elevator response and it continued its

wayward journey to an ignoble crash.

What was my rudder doing during this short flight? Nothing! As usual, I had allowed the rudder to return to neutral immediately after takeoff. Had I applied some right rudder when the airplane veered to the left, I probably could have brought the airplane back to a safer heading and avoided a serious crash. Why do most of us ignore the rudder once our airplanes are in the air? It is one of the most important and least used of our three control surfaces. I have learned a good lesson and have my name on the crash trophy to prove it.

We were once encouraged to learn how to make "coordinated turns." This requires the slight application of rudder plus some compensating aileron adjustment and can result in a much smoother and more professional looking turn. Try it out.

In other words, stop ignoring that forgotten rudder and let it help you expand your flying skills.

from *The CAM Journal*
Central Arizona Modelers Inc.
Marvin Hinton, editor
Sedona AZ

Military speak

"A slipping gear could let your M203 grenade launcher fire when you least expect it. That would make you quite unpopular in what's left of your unit."

Army's magazine of preventative maintenance

"Aim toward the enemy."
US Rocket Launcher instruction

"When the pin is pulled, Mr. Grenade is not our friend."
U.S. Marine Corps manual

"Cluster bombing from B-52s is very, very accurate. The bombs always hit the ground."
U.S. Air Force

"If the enemy is in range, so are you."
U.S. Army Infantry Journal

"It is generally inadvisable to eject directly over the area you just bombed."
U.S. Air Force manual

"Whoever said the pen is mightier than the sword obviously never encountered automatic weapons."
Gen. MacArthur

"Try to look unimportant; they may be low on ammo."
U.S. Army Infantry Journal

"You, you, and you ... panic. The rest of you, come with me."
U.S. Marine Corps gunnery sergeant

from *The Beam*
Eglin Aero Modellers Club
Dale Palmer, editor
Niceville FL

Choosing your first airplane

By ADAM STRAUSNER

Choosing your first Radio Control (RC) airplane can be the most confusing endeavor in modeling. Nearly everyone you run into will have his or her own opinion and way of going about it.

After your first trip to the airfield to talk with the other club members, you may possibly leave more confused than ever. By asking about a good first airplane, you could cause a full-out debate on model types, brands, and sizes.

Here is my advice for choosing your first airplane along with some basic attributes of a first airplane that should make learning to fly much easier.

Style: trainer (high wing configuration)

Engine Size: .40 to .60

Landing gear style: tricycle (it is preferable to replace the standard nose gear with a dual fork style)

Functions: four (aileron, rudder, throttle, and elevator)

Wing: flat bottom airfoil for stable flight and easier maneuverability (not acrobatic)

Airplane Size: .40 to .60 (this is based on the engine size) The larger the airplane is, the better. A larger airplane is easier to see, is much easier to fly, and is more stable.

Almost-Ready-to-Fly (ARF): Some construction is necessary, but it is usually 10 hours or less. The ARF model does not normally come with an engine or radio.

Ready-to-Fly (RTF): Very little construction is needed, usually two hours or less. RTF models are normally supplied with an engine and at least the most basic of radio equipment.

While most all of the trainers available today are either ARF or RTF, allowing the new modeler to get into the sport with a minimum of building skills or knowledge of model aircraft, there are no set rules as to what is

supplied and what is not. Be sure you understand what all of the components are that you will need to get your aircraft airborne before you make your purchase. Depending on your skills and/or the time you plan to invest into your first airplane, you would be best advised to discuss your options with your local hobby store professional. Some will even assist you with completion and the setup of your new aircraft.

If you have to purchase an engine separately, keep in mind that bigger is not always better. Putting too large an engine in a trainer will complicate your ability to learn to fly. If the engine is larger than the specifications of your trainer, chances are the increased torque will cause difficulty when you are taking off or landing. Follow the guidelines set by the manufacturer.

Choosing your first Radio Control airplane can be the most confusing endeavor in modeling.

After you have made your selection and brought it home, you must read the instructions thoroughly and understand them before you proceed with any assembly. If you do not feel comfortable with the instructions, put all the parts and instructions back into the box and take it to a club meeting. Most members will be glad to help you.

Keep in mind the number of methods for assembly will be as varied as the number of people you ask. Even though everyone will have different opinions as to how to get your aircraft ready, the results will be the same: a safe, reliable, and airworthy model. Therefore, you need to make your own decision as to which method you feel the most comfortable with, considering your abilities.

Now that you have now gotten your airplane completed and feel you are ready to try it out—don't! Do not take

it out into the yard or a nearby field and think you are just going to start it up and taxi it around for a while. More new aircraft have been damaged this way than you would ever care to know about. All it takes is a small puff of wind while taxiing to make your airplane airborne.

Once you're flying, you will have to land. Remember, since you are most likely new to the sport and definitely new to this airplane, you probably don't know how to land. Chances are the airplane will need some adjustments to the control surfaces before it is ready to fly, even though you followed the directions to the letter. No two airplanes are set up exactly the same. Your aircraft should be checked by a qualified instructor before you even start the engine.

Once your airplane has been checked, a qualified instructor should take it for its maiden flight. This allows the instructor to make the final adjustments to the trim of the airplane while in flight, ensuring that you will have a stable platform to learn. If you try this on your own, you will almost assuredly crash. Even though there is always the excitement to get your new airplane into the air as soon as you can, you should exercise patience. You don't want to start your experience in this sport by having to repair or worse, replace your airplane.

Once you have made a few successful takeoffs and landings and perhaps even some routine flight patterns in the air, you will feel more confident. This doesn't mean you are ready for a "war bird" or an acrobatic airplane yet. Don't rush your skills; develop them.

Adam Strausner is the senior adviser to the board members of the Frederick Model Aircraft Club, a hobby shop owner, and a long-time modeler.

from the newsletter of the
D.C. Radio Control Club
Andy Kane, editor
Silver Spring MD

THOUGHT
for the day

*Never be afraid to try something new!
Remember, amateurs built the Ark; professionals built the Titanic.*

Hints

& Tips

Information you can use

Storage for small items

If you can find a kitchen spice rack at the flea market, get one to put your CyA and epoxy glue bottles in. The kind made for small bottles works very well. Empty bottles can be used to store small hardware items.

Bending balsa

A spray bottle of water on your workbench comes in handy for bending balsa sheets. If you spray a little water on the wood before you use filler, it will stick much better and will go on smoother.

Repairing dings and dents

Have you ever had a dent in a balsa leading edge? Try fixing it with water! Get a small diabetic syringe and put water in it. Inject a little water into the balsa around the dent in the leading edge. Heat the area with your covering iron. When the water starts boiling, it will build pressure and push the balsa out to its original shape.

Stir sticks

Use popsicle sticks. The next time you are in the craft shop, pick up some popsicle sticks. They come in boxes of 100, 500, and 1,000 and they're cheap. You will use them for all kinds of things, including servo rails, reinforcing splices, skids, fuel tank stops, mixing epoxy, and any other place you use screws.

from *Airmailer*

Benton County Radio Control Club
Jim Trump, editor
Corvallis OR

Have a biscuit

Strengthen your wing's center joint

by cutting a half-round slit with a Dremel saw into the leading edge and then gluing in half-round biscuits cut out of $1/32$ -inch (0.8 mm) birch plywood.

Rotary film cutting

Those miniature, rotary fabric-cutting tools from the fabric or sewing store are ideal for cutting covering film. Use a straightedge as a guide, or make curved trim pieces freehand or with a French curve.



from *Brainbuster Newsletter*
Brainbuster Free Flight Club
Abram Van Dover, editor
Newport News VA

Cooling your engine

If your engine is running hotter than you would like, how can you cool it down? Most people make the mistake of thinking more is better when it comes to the air inlet at the front of the cowl. This is a common error and while it seems logical, the reverse is actually true. To properly cool your engine, you need more outlet, not more inlet. You want at least 2:1—preferably 3:1—air out to air in ratio. Otherwise, it makes a dam and the air cannot come into the cowl because it has nowhere to go out of the cowl. If your engine is not cooling properly, try blocking off the other air inlet or opening the belly of the cowl further.

Stud threads

You know those threaded metal studs you get with your Ny-Rods? If

you use a small electrical wire nut screwed into one end of the stud, you'll find it much easier to screw the other end into the inner pushrod of the Ny-Rod. It saves the stud threads too.

from the newsletter of the
Duluth/Superior R/C Club
Joan Johnson, editor
Knife River MN

Need a bench?

Need an extra workbench, yet don't have the space for a permanent one? How about an ironing board? It has a padded top (if you choose), is adjustable for height, and you can even sit down while covering or doing close-up work. Best of all, you can fold it up and put it away.

from *The Tail Spinner*
via the newsletter of the
Duluth/Superior R/C Club
Joan Johnson, editor
Knife River MN

Wing/tail alignment

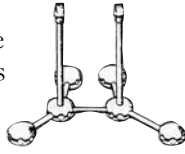
Get an old telescope antenna (the same type as found on transmitters). Use it as an adjustable-length measuring rod to compare critical measurements on airplanes during construction. This can help you compare the distance from one wingtip to the stabilizer and to make sure this distance is equal on both sides of the airplane. This ensures that the stabilizer is parallel to the wing.

from *The Fly Paper*
South Bend Radio Control Club
Jack Allinger, editor
South Bend IN

continued on page 15

Tinkertoy balancing jig

This jig for determining the balance point of a new model is made of Tinkertoy parts. And if you have young children who have the toy, it won't cost you a cent.



Blind nut safety

Blind nuts have been known to fall out inside the structure. Recess, then glue a 1/16-inch plywood plate over the top to capture the nut. Sketch shows wing strut attachment.

from *Prop Spinner Chatter*
Eugene Prop Spinners
Mel Marcum, editor
Eugene OR

Alternate covering

Contact paper can be used to cover aircraft. It is a little tricky to get laid out because of the adhesive on the back, but just try to cover the area as neatly as possible. Once you have your airplane covered, use a heat gun, starting away from and slowly moving closer to the covering. The stuff melts as though it is going to go through the wing. As it cools, it shrinks until it is drum tight. You may have to retouch some areas. It is a little heavier than MonoKote and others, but it is a lot stronger and cheaper.

Spreading filler

A cheap tool for spreading model filler is a used credit card. I have several and have even cut strips off one just to get a narrow spreader for trickier areas. Credit cards work just as well as the spreaders you buy from the auto parts store. You get two or three in the mail each month, so use them.

Three-blade propellers

Three-blade propellers are useful when you have a scale airplane that's modeled after an aircraft that uses them. However, since the engine has more mass to turn, the maximum rpm is lower. The general rule is to use a

three-blade propeller one inch smaller in diameter than the two-blade you would typically use. This will allow the same maximum rpm. You also may increase the pitch by one inch, but experiment and see what works best with your engine and airplane. Your model also will have a different sound with a three-blade propeller.

from *Barf Rag*
Beresford Area Radio Flyers
David Larsen and
Dennis Johnson, editors
Alcester SD

Securing batteries

Use dental floss to secure the airborne battery to switch plug connection in your model. The battery pack should be secured in the model so it doesn't move around a lot, but it also should be wrapped in some kind of shock and vibration absorbing material. Take care to properly secure the battery, make sure the plug to the switch harness is tight, and to route the wires so they don't snag or get pulled during installation or flight stresses.

A second line of security is a good idea to make sure the plug doesn't come apart. Here comes the dental floss to tie the battery and switch plugs together. It's thin enough to slip between individual wires in the plugs and wrap around each end of the plugs a couple of times, each time slipping the floss between the individual wires. Finish the tie job with a square knot. Low cost and very little added weight.

from *By-Lines and Fly-Lines*
Ocean County Modelers, Inc.
Salvatore Piu, editor
Lakehurst NJ

Pilot profiles

Why not put a profile of a family member as the pilot of your next airplane? Take a photo, blow it up to scale size, cut it out, and mount it on foam core. You can then glue it to the cockpit of your airplane.

from *RAMS Airmail*
Rochester Aero Model Society
Leo Jaeger, editor
Rochester MN

More military speak

"Tracers work both ways."
U.S. Army Ordnance manual

"Five second fuses only last three seconds."
U.S. Army Infantry Journal

"If your attack is going too well, you have walked into an ambush."
U.S. Army Infantry Journal

No combat-ready unit has ever passed inspection. No inspection-ready unit has survived combat.

"Don't ever be the first, don't ever be the last, and never volunteer to do anything. Never tell the Platoon Sergeant you have nothing to do."
Unknown Marine recruit

Don't draw fire. It irritates the people around you.

Mines are equal opportunity weapons.

If you find yourself in a fair fight, you didn't plan your mission properly.

Waterproof sleeping shelters aren't.

Smokeless powder isn't.

Get your first shot off fast. This may upset your enemy enough to allow you to make your second shot count.

Place your clothes and weapons where you can find them in the dark.

Courage is the complement of fear. A man who is fearless cannot be courageous.

Peace is an extension of war by political means.

You can have peace or you can have freedom. Don't count on having both at once.

from *The Beam*
Eglin Aero Modellers Club
Dale Palmer, editor
Niceville FL

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