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KNOWING FIRST AID: How it could keep you safe at the flying field

By JIM MYNES

Recently, I was asked to make a list of what items should be included in a first-aid kit to take to the flying site. With four years of experience as an Emergency Medical Technician (EMT), my first reaction was to have a manned and fully stocked ambulance at the field. Almost immediately I realized I would have to trim a little here and there to make it more portable.

In considering what should be included, I found there were many items I would consider essential but would be relatively useless to someone who had no first aid training. I tried to narrow the list to things the average person would need to manage a minor to moderate injury.

People should ensure that others know about their special health concerns, and they should bring the needed items to the field.

There are some essential items that didn't make the list. This is because they pertain to individual health needs. It is up to each person to ensure that others know about special health concerns, and those individuals should bring the appropriate items to the field in case an emergency occurs. For instance, if you are allergic to bee stings, get an Epi-pen and bring it with you to the field. Make sure you tell someone about your condition and show him or her how to use the Epi-pen in case you are unable to. Don't leave it in your car, as it will do no good there when it's needed and no one knows where to look for it. The same applies to diabetics or people with heart problems. As an EMT, if I see you lying on the ground, it would be very helpful if I knew about any underlying medical conditions you may have.

Here are some suggestions for everyone:

- Learn Cardiopulmonary resuscitation (CPR)
- Take a basic first-aid class
- Learn CPR
- Know the telephone number to the nearest ambulance service
- Learn CPR
- Know the location of the telephone nearest to the flying field
- Learn CPR
- Be able to give directions to the flying site

Did I mention that you should learn CPR? Yes, it will take up some of your building time, but it is one skill that could save a life. Your local chapters of the American Red Cross and the American Heart Association should be sponsoring CPR classes on a regular basis and can put you in a class.

When you consider what we do, the most common injuries we encounter are lacerations due to finger/propeller skirmishes. Usually these are not severe and can be managed with no problem. However, other hazards are present and to ignore them only invites disaster.

How many times have you seen glow fuel catch fire? Probably not many since the flame is nearly invisible.

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First aid, *continued from page 1*

Because it is hard to see, this sort of fire is especially dangerous, and we should be that much more prepared to deal with it. In addition to a first-aid kit, there ought to be a fire extinguisher on the field at any modeling event where glow fuel is in use.

I keep reading about the hazard of propeller blades flying off, but I have yet to see anything like this happen. Just the same, I wear safety glasses to protect my eyesight in the event of an accident. They've never stopped a propeller blade, but they have stopped spraying fuel from getting me in the eye. Mine are also sunglasses so they serve a dual purpose. It's purely a matter of personal choice, but I think everyone should consider protective eyewear when operating a model engine.

With all that said, here are the items that made my list:

- Band-aids of various sizes
- Latex gloves
- Four packs sterile 4 x 4 dressings
- Four packs sterile 2 x 2 dressings
- Two 3-inch Kling or Kerlix bandages
- Two 2-inch Kling or Kerlix bandages
- One roll 1-inch bandage tape
- Antiseptic ointment
- Bandage shears
- Water (preferably sterile) for flushing fuel out of eyes or dirt out of wounds

This is a very basic first aid kit, and items should be added to suit your group's needs. My kit has much more, but hopefully, it never will be needed. I have found the best strategy is to bring the kit out so it is handy; that way no one will get hurt. The only time we've ever really needed it, I had to run to the truck to get it.

May your arm grow weary from line tension and your streamers stay in tact!

from *The Monocle*
Barons Model Club
Darrel Stebbins, editor
Spokane WA

Tidbits

If Wal-Mart is lowering prices every day, how come nothing is free yet?

Some mistakes are too much fun to make only once.

Don't cry because it's over; smile because it happened.

We could learn a lot from crayons ... some are sharp, some are pretty, some are dull, some have weird names, and all are different colors, but they all manage to live in the same box.

A truly happy person is one who can enjoy the scenery on a detour.

Once over the hill, you pick up speed.

If it weren't for stress, I'd have no energy at all.

Whatever hits the fan will not be evenly distributed.

Everyone has a photographic memory—some just don't have film.

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

Are you wasting time and money?

By KEN REED

"Why am I wasting my time and money with this hobby? This is a big joke."

A friend of mine said this to me as we drove back to his house following his first major crash at the flying field. He has never flown again! Frankly, at that time, I didn't know what to say, but since then, I have thought about why some give up when they are just getting started.

In my experience, I had a mentor who helped me get over the learning curve to the point where I began to feel confident. I finally reached a place where I felt more positive when I left for the field, believing that this would be a good experience, and I would probably bring my airplane home in good shape.

Do it over and over and over until you can go out and truly enjoy a great hobby.

No one feels competent when learning a new skill. Our first level is when we are totally unskilled, so in our club we begin with an instructor and a buddy box.

The second level is when we are flying our trainer, but we still feel awkward and we have to be very deliberate and intentional.

The third level occurs when we become more competent, but we are still intentional while we try to relax and enjoy the experience.

Finally, we reach level four because we have practiced doing basic maneuvers plus taking off and landing so many times that our subconscious takes over and everything become automatic. In other words, we "have a feel for it." It's like driving a car with a stick shift. You go through all four levels until you can drive without saying to yourself, "Now I must push in the clutch and slowly let it out again while gently stepping on the gas pedal" and so forth.

My friend crashed when he was still in the awkward phase of learning a new skill, and that's why he asked, "Why am I wasting my time and money with this hobby?"

No one will say this is an easy hobby to learn, but I would encourage all you new people to hang in there and build on your strength as you move from level to level. The key is to practice, Do it over and over and over until you can go out and truly enjoy a great hobby.

from *Hi-Flyer*
Arvada Associated Modelers
Eric Gropp, editor
Golden CO

Teaching Radio Control flying: Before instruction

By MIKE LYNCH

This is the third in a series on teaching Radio Control (RC) flying. Watch for additional information in future newsletters.

Instructors tend to get the brunt of questions from people just thinking about getting into the hobby. Once someone has started learning to fly, instructors are bombarded with questions related to all facets of the hobby. Even after the person has learned to fly, if he or she has questions (especially about aerobatics), the instructor is the first one approached.

This section is devoted to handling common questions and problems a beginner has. Even though as an experienced pilot you already know much of what is presented in this section, the information should help with your ability to relate what you know to beginners. Also, much of this section can be copied and given to beginners with questions.

In this section, I do mention some brand names and actual models, but keep in mind I do so for the sole purpose of offering comparisons. I am not endorsing nor criticizing any of the products mentioned. There are many radios, airplane kits, Almost-Ready-to-Fly aircraft, engines, and flying accessories of excellent quality. In fact, you really have to go out of your way to find a poor product in this hobby.

Common RC questions

It has been my experience that most beginners in the hobby tend to have the same set of questions as they enter into the Radio Control airplane hobby. I'll begin by giving a summary of these questions and supplying brief answers.

How does the radio-control system work? As with any kind of radio, a transmitter (held by the flier) is used to send signals to the receiver in the airplane. Both are powered by (usually rechargeable) batteries. The radio system can have several channels. Each channel is used to control one airplane function. Servos (one for each channel) are used to cause the actual motion within the airplane to make control surfaces move.

A good beginner's radio configuration has four channels. These channels control ailerons, elevator, rudder, and throttle. Two sticks (like computer game joysticks) on the transmitter allow the flier to manage these four controls. With the most common radio setup mode, the right stick is used to control aileron (left/right) and elevator (up/down). The left stick is used to control rudder (left/right) and throttle (idle through full throttle). Like a computer game joystick, the aileron, elevator, and rudder sticks are spring loaded. When you let go, these sticks spring back to the middle of the control. The throttle stick stays where you place it, from idle to full throttle.

Instructors get the brunt of questions from people thinking about getting into the hobby.

Keep in mind that radio-control systems can have more than four channels. Other controls for these channels include retractable landing gear, flaps, and even smoke systems. For now, you should concentrate on the four basic controls. Leave the fancy stuff for when you have mastered the hobby.

Within the airplane, servos receive signals from the radio's receiver whenever either of the transmitter sticks is moved. The servos respond according to the motions of the transmitter sticks and cause the control surfaces of the airplane to move in sync with stick movements (through mechanical linkages). *Instructors:* If an interested person at the flying field has questions about radio systems, be sure to demonstrate with your own airplane.

Other radio terminology

Trim controls: It is not possible to perfectly set each servo and control surface. Say, for example, the airplane tends to climb in a hands-off condition. The elevator trim control gives the flier the ability to trim in some down elevator without affecting the joystick for the elevator. In essence, trim controls allow the flyer to set the radio so the aircraft will fly straight and level with hands off the radio. All radios come with trim controls for the four basic channels.

By the way, this is another reason beginners should seek help. It is highly unlikely that a new airplane will behave perfectly with regard to trim settings. An airplane that is not trimmed properly can be difficult to fly (even for an experienced flier). For a beginner, it will be impossible to fly. During a new airplane's first flight, the instructor should trim the airplane, causing the centered or neutral position of each channel to be centrally positioned.

Servo reversing: Sometimes it's inconvenient (if not impossible) to mount the servos in a way to properly control the control surface. In many cases, the servo will come out backwards (left aileron comes out to be right aileron, for example). The feature servo reversing allows you to mount the servos in the most convenient manner, and if one or the other comes out backwards, the servo reversing switch for that servo (in the transmitter) can be turned on. Servo reversing is a standard feature on almost all radios sold today.

Dual rates: Though not included on every radio, this feature allows you to change the responsiveness of your airplane's control surfaces. (Usually this feature only applies to ailerons and elevator.) On high rates, your servos will move full travel and the airplane will be quite responsive. On low rates, your servos may only move about 40 to 60 percent of their total travels. This is a nice feature for beginners, since you can reduce the responsiveness of your airplane, making it easier to fly.

Mixing: This feature allows you to have one control automatically invoke another. For example, as you give left aileron, the radio can be adjusted to automatically give some right rudder (to make for a smoother turn). While this is a nice feature for experienced

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Teaching RC flying, *continued from page 3*

fliers, it doesn't help beginners learn to fly. Don't go out of your way to find a radio with this feature for your first radio.

Radio styles: AM versus FM versus PCM—generally speaking, the most reliable, and most expensive, radio style is Pulse Coded Modulation (PCM). Next in reliability and price comes Frequency Modulation (FM). Finally, comes Amplitude Modulation (AM). Although almost all of these radio styles are highly reliable, I recommend that beginners purchase an FM radio.

Trainer system: This feature allows the safest manner of flight instruction. You will see more information about trainer systems later. Remember a beginner should not buy a radio without the trainer system!

More tidbits

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

If you can smile when things go wrong, you can obviously find someone to blame.

The sole purpose of a child's middle name is so he can tell when he's really in trouble.

Living on earth is expensive, but it does include a free tip around the sun.

Birthdays are good for you; the more you have, the longer you live.

How long a minute is depends on which side of the bathroom door you're on.

Ever notice that the people who are late are often much jollier than the people who have to wait for them?

If ignorance is bliss, why aren't more people happy?

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

Get some superior pilot skills

By GARY THOMPSON

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

Get some skills

It just doesn't happen without some effort. Many new pilots are happy to be able to fly a trainer after they solo, but after spending some effort to learn to fly by yourself, you should continue to develop the additional skills needed to become a superior pilot. These skills are not simply acquired. It takes a plan to continue mastering the fine points of Radio Control (RC) flying. Acquiring the judgment to know your own limits is not easy. Here are some tools:

1) Read. Spend time with the RC information available in magazines, books, on the Internet, etc. Look for common sense approaches to construction, safety, and flying tips.

2) Participate. Attend RC activities where there are experienced fliers. Get involved as an observer, judge, recorder, or official. You'll be surprised at what you learn. As you acquire skills, increase your participation.

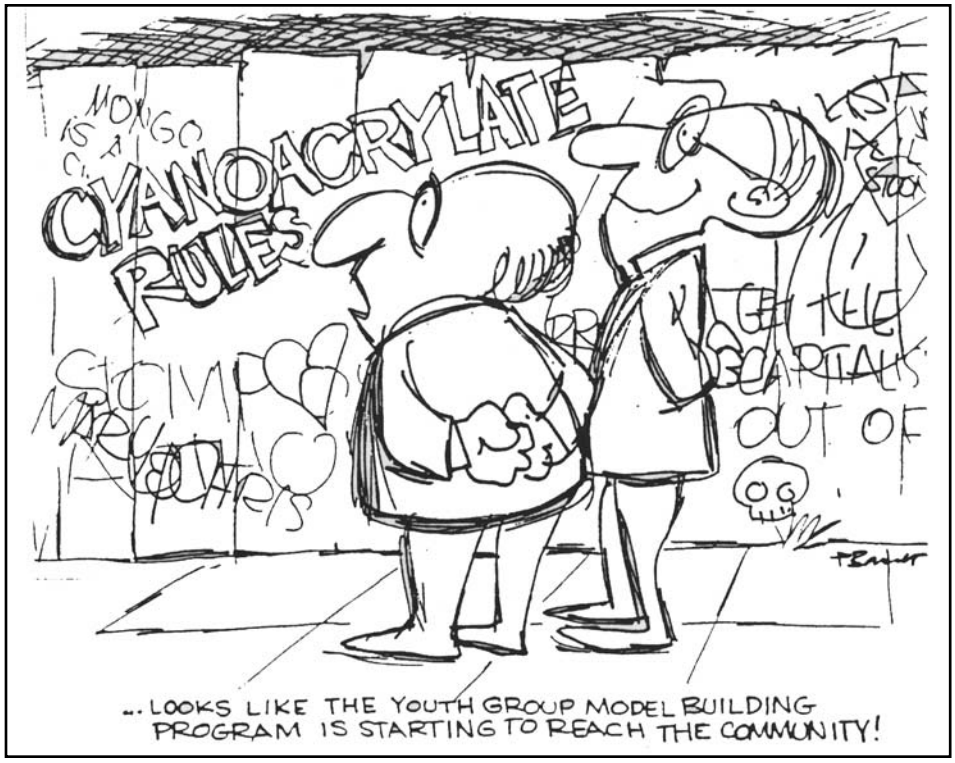
3) Practice. As you learn new skills, do more than just file them away. Practice them. This is the key to extending your RC abilities. Don't just continue to do the same thing every time you fly. To acquire a new skill, you must try it.

4) Ask for help. This an overlooked way to acquire skill. Identify someone with the skill and ask for help. Even in competitive events, almost all RC fliers are willing to share their experience. You can save yourself many mistakes by learning about the mistakes of others.

5) Master new skills. Learn at your own pace. Don't overextend your ability. Give yourself plenty of margin for error and gain absolute confidence through practice. Each person has different talents, so things that are easy for others may not be easy for you and vice versa. By practicing, you can avoid making major mistakes (and the coincident expense and embarrassment). Continued practice brings confidence and mastery.

Have you tried anything new lately? Now go fly right!

from *Transmitter*
Palomar RC Flyer
San Marcos CA



Make sure your aircraft is ready for flight

This check list is based on one found at members.tripod.com/rcav8or/pflight.htm.

Before leaving the house

✈ Do you have the transmitter with the correct channel, your airplane, wing, rubber bands or wing bolts, glow starter, electric starter, proper fuel, and your flight box?

✈ Do you have cold drinks, a hat, sun block, sunglasses, insect repellent, and long pants for walking in the woods?

✈ Check your airplane and transmitter batteries. Is there any damage to the airplane, wing, or covering? Turn your transmitter and receiver off.

Before a new model's first flight

✈ Is the model too heavy? Is the center of gravity within the range shown on the plans? Is the model balanced side to side?

✈ Are all flying surfaces at the proper angle relevant to each other? Are the control surfaces securely attached with all snap-links closed? Are the control throws in the proper direction and amount?

✈ Have all screws been attached to servo horns? Are engine screws tight?

✈ Is the fuel tank level with the flying altitude of the airplane? Is the carburetor at the same height (not above) as the fuel tank? Is the fuel tank clunk in the proper position and moving freely?

✈ Has a full range check been performed on the radio? Has the flight pack been checked with a voltmeter? Have the receiver and battery been protected from vibration and shock? Is the receiver's antenna fully extended and not placed near a fuselage with any sort of metallic covering?

Before the first flight of the day

✈ When you remove the transmitter from the car, make sure it is off. Put your AMA card in the slot and the transmitter in the impound if someone already has the frequency.

✈ Before putting on the wing, check all servo mounts for loose or missing screws. Check all wiring to make sure there are tight connections and no broken wires. Check for broken antenna wire. Check wing mounting blocks to make sure they have not broken loose, or if using rubber bands, check rubber band pegs for tightness. Check the vertical and horizontal stabilizers for damage. Make sure the fuel tank is not loose in the airplane and the clunk (fuel pickup) is in the back of the tank.

✈ Check landing gear for loose wheel collars or bent materials. Check for holes in the covering. Make sure the muffler is attached and the engine mounts are tight on the firewall.

✈ Is the propeller tight? Check the throttle linkage. Pull on the ailerons to check hinges. Check the aileron servo and linkages. Check rubber bands for cracks or oil. Make sure the wing is on straight and is square with the fuselage. Make sure the wing is on tight if using bolts, and that both bolts are in the proper holes. Check the balance before filling the fuel tank, and after filling the tank, check for leaks.

✈ Get your transmitter from the impound. Make sure you tag your frequency. Turn on your transmitter and then turn on the receiver in your airplane. Stand behind the airplane and check that all control surfaces work properly and move in the correct direction.

✈ Do a range check. Make sure the antenna is down all the way and both the transmitter and receiver are turned on. Walk about 25 yards and try all the controls. Someone should be near the airplane to make sure everything is working. Put your antenna up now. Check all trims on the transmitter. Are they where they should be?

✈ Before starting the engine, make sure throttle is in the idle position. Start your engine. Idle okay? High speed okay? Will it run if it's at a 45% angle at high speed? Will it transition from low to high to low to high without stalling? The engine will shut off from the transmitter. Start the engine (if applicable) and test the entire throttle range. Run it at full throttle with its nose in the air for at least 15 seconds.

Before each flight

✈ Always refuel, even after short flights.

✈ Check the operation of all control surfaces.

✈ Make sure the wing is tight and the rubber bands are okay.

✈ Check the landing gear.

✈ Check for any damage or holes in the covering.

✈ Make sure the antenna is up.

✈ Start and check the engine. Run the engine at least to full power before takeoff. An engine that just ran perfectly may never run right again.

✈ *After a hard landing:* Basically do the "before first flight check" again. Pay extra attention to dirt in the engine, bent landing gear, control surfaces, the propeller, clunk in the tank, and internal damage to the wing or fuselage. When you land, turn your receiver off first, then your transmitter.

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

Quotable Quotes

"The soaring problem is apparently not so much one of better wings as of better operators."

Wilbur Wright as he observed buzzards in flight

(Funny how 100 years later that statement still holds true.)

from *The R.J. Hhog*
Hempstead Harbor
Aero-Modelers Society
John Luca, editor
Roslyn Heights NY

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From the halls of model aviation truths:

"When the crash is inevitable, relax and enjoy it. Everybody else is going to!"

from *Space City Crash*
Space City R/C
Mike Crotts, editor
Houston TX

Smile! You're on "Candid Camera"

By DAN ROSENTHAL

Ever wonder what it would be like to be inside your model airplane while it flew? To be able to look down in amazement and see the world below from a perspective that only birds could behold? Well, I found a very cheap, fun way to do it.

One day, while at Wal-Mart, I spotted a freestanding cardboard display with complete camera outfits. These included auto-focus cameras with motorized film advance, two AA batteries, and one roll of Kodak 24-exposure, 400 speed film. The price, you ask? $8.58! I thought to myself, "I gotta stick one in my airplane!"

In the "Tips and Tricks" section of one issue of *Model Airplane News,* there was a how-to article on building a camera box for a model airplane. This article provided a rough idea on how to build my own box.

I used 1/8-inch plywood on all sides of the box and determined its size based on the dimensions of my camera. I left approximately a quarter of an inch additional room on the two sides, the bottom, and the rear of the box to allow for installation of foam padding. Yellow MonoKote fuel-proofs the box. The front end has an opening large enough to allow the lens and a portion of the flash to show. I decided to allow the flash to show because it signals proper camera operation until the film is spent (the camera stops flashing). Believe it or not, even on a bright, sunny day, the flash is easily visible from great heights.

Next came the design of the mechanism to activate the camera's shutter. "Tips and Tricks" suggested mounting a servo to the box in such a way that when the servo arm rotates, it depresses the shutter button on the camera. I first wrapped my standard-size servo (orphaned after my trainer decided to dig a gopher hole in 2001) with masking tape, then used Goop to attach it to the box. For added strength, I wrapped more masking tape around the servo and the box.

Ever wonder what it would be like to be inside your model airplane while it flew? Here's a cheap, fun way to do it.

Lastly, I had to devise a way to attach the box to the underside of my airplane. Ideally, you would want to do this on the bottom of the fuselage of a high-wing airplane, in the area of the center of gravity. I did not have such an airplane. I was using a low-wing sport model because it was the only one available to me at the time.

First, I epoxied a piece of balsa to the bottom of the right wing. Then I drilled two holes through the camera box and into the balsa mount. Since I intended for my camera box to be removable, I realized that the holes in this piece of balsa needed reinforcement. Constantly screwing and unscrewing the box would weaken the holes. I inserted nylon tubing into the holes of the balsa rectangle (the one epoxied to the wing). This added some "bite" to the screws.

Taking pictures is literally a "snap." I use channel 5 on my transmitter to activate the shutter servo, and since the camera has motorized film advance, I can snap an entire roll in one flight if I so desire.

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

Improving poorly controlled, dangerous takeoffs

By JIM DEVINE

How often have you seen an airplane that is taking off to the east roll off toward the pilot stations? Usually, the pilot gives the engine more gas and, using the ailerons, yanks the airplane back to the right. Occasionally, the airplane continues to the left, clears the safety barriers, and heads for the people in the pits and the cars just beyond.

If you have poorly controlled, potentially dangerous takeoffs, try practicing control of your aircraft on the runway. First, check your wheels and make sure they have a little toe-in. Also, the wheels should not continue to spin when given a flick. To create friction and avoid free-wheeling, slip a 3/16-inch long piece of fuel line on the axle and push the retainer collar in tight. With proper adjustment, the wheels will turn only if you push them with your finger. This braking action allows for a high idle speed without the airplane moving, which reduces the chance of the engine dying when the idle is too low. This also helps stop an airplane that might otherwise roll off the end of a runway during landing.

Pick a day when the wind is light and the runway isn't being used. Practice taxiing back and forth the length of the runway, using the rudder for control. Stay within a few feet of the yellow center line. When you have mastered taxiing at a slow speed, click the throttle up another notch or two and keep practicing. With enough practice and a slow, smooth application of power, you can approach takeoff speed while moving down the center of the runway. You also can practice aborting the flight by shutting off the fuel when you are about to lose directional control of the airplane.

With this improved directional control and practice at aborting a poorly controlled airplane, your takeoffs will be much safer and a pleasure to watch.

from *TRAC News*
Tampa Radio-Control Aircraft Club
Jim Smith, editor
Tampa FL

Is modeling a good thing for kids to learn?

By JOE FINKELSTINE

Has the following ever happened to you at the field?

You are standing there watching a ship or two fly and someone you don't know strikes up a conversation with you, asking this question, "Is this a good thing for kids to learn?" I suspect this has happened to almost all of us at least once.

I often have thought of my answer beforehand, especially since the "kid" doing the learning also may be an adult trying to determine if he or she would enjoy this hobby. For most of us, the immediate response is a resounding and enthusiastic yes! However, if we are not careful, our response may sound more like a justification of why we are involved in the hobby.

If you consider the reasons that someone gets into the hobby against the reasons they stay in the hobby, I think you will see an evolution of ideas and justifications. Some of your original ideas for getting into the hobby will still be valid, but I am certain a few more have come about to keep you involved.

Since the flying season is upon us, you may find yourself being asked this question in the near future. Allow me to throw a few answers your way.

Multi technology/discipline integration skills

When I first try to say this, most people's eyes glaze over (reminding them of the science classes they used to fall asleep in), but hear me out. Think about the general skills and areas that must work together for a ship to fly. From a very high level, we have several mechanical and electrical disciplines that must work together. Anyone who is in this hobby for more than a few years will soon gain the skills (whether he or she recognizes it or not!) of integrating electrical and mechanical systems to work toward a common purpose.

Now, why is this valuable? If you look at most of the skilled professions in this world, one key asset for an individual will be his or her ability to integrate across disciplines. In my 20-plus years of working for software companies, I can tell you that the people who do well have always been able to bring the knowledge of multiple disciplines together to solve complex problems. It is difficult to overstate how important this is in our technology-driven world. A student can go to school to learn a particular computer language, only to find the world has moved on from that "chosen" language to another one by the time graduation rolls around. If the student also learned the skills of problem analysis, resource allocation, etc., then all is not lost. This well-rounded student applies the core skills to the latest technology.

Has anyone asked you, "Is this a good thing for kids to learn?" For most of us, the answer is a resounding and enthusiastic yes!

As we mature, our bag of tricks usually increases in individual disciplines. If you combine all of this with the ability to integrate these into common purpose goals, like making a Radio Control (RC) airplane fly, they will have demonstrated this highly valuable asset. Think about everything that has to work right to make your ship fly and stay in one piece. Now think about how much you have learned in electronics, material science, strength versus weight tradeoffs, etc. You have to understand each of these disciplines to some extent to make them work together. I would argue that in today's economy, this is a significant justification to the inquisitive parent.

Will the kid be able to show this on a resume? Probably not, but when he or she gets an interview and is asked, "Tell me how you solved a complex problem," a great example could come from this hobby.

Patience and persistence

I am sure most of you took at least a month to learn to solo. Think about how much of society focuses on instant gratification. We all intrinsically know as parents that blood, sweat, and toil are needed in our children's lives.

One of the key benefits of learning RC is that it's not easy. Most beginners soon realize that they are in for some work, and they should be proud of that fact when they solo. I like to have the parents of a younger student fly with me immediately after their child gets his or her wings. Believe me, it helps solidify the idea that this was a great accomplishment. I also do my best to bring parent involvement up when first asked about the hobby, but this is tricky as they might be scared off! Keep in mind that this difficulty (coupled with a lack of persistence) is one of the key reasons we get half a dozen people each year who start but drop out.

I would never recommend that you inform someone that learning to fly is not easy. In the same breath, you also must say that it is doable by anyone who is willing to give a solid and persistent effort.

Good old-fashioned craftsmanship

We have several club members who build outstanding models that look good from up close or in the sky. Ours is one of few hobbies that allows you to develop and display craftsmanship. Many activities I've seen kids involved in today are passive and don't encourage much in the way of creativity or craftsmanship. This hobby certainly encourages this behavior.

Bringing together multiple generations

Our hobby is one of the few I know of nowadays that grandparents, parents, and children can all enjoy. This doesn't mean all will enjoy it, but if you look at the age span in our club, it goes from 10 years old to 90. All ages can find something to keep them interested and challenged.

Hand-eye coordination

I am always amazed at the high level of hand-eye coordination my children's generation displays when playing video games. Every time I get a younger one asking questions, I point out that RC

continued on page 8

Modeling and kids, *continued from page 7*

flying is much more real and difficult than their silly shoot 'em up game because the laws of gravity are strictly enforced. No instant direction changes and infinite fuel allowed here!

We also should be cognizant of the fact that each generation has developed its own favorite pastimes and technologies. My baby boomer generation was a transitional one in terms of technology. When I was a young lad in the 1960s, we had no technology (i.e. Nintendo) to keep us in front of the television, so I learned how to build go-carts and other mechanical things. My parents' generation was the one more enamored with flight, and they were the pioneers of model aviation.

My point here is that what motivates you to stay involved in this hobby might not be relevant to the person you are talking with. You may very well find that none of the ideas I listed above matter to the person who inquired about model aviation (although I suspect that the person will be interested, or he or she wouldn't be at the field asking questions). It is certainly all right to talk about what you like, but I would suggest that you add value from the point of the person asking the question. One way to do this is to ask what they find interesting and to start your conversation from that.

For those who stay with the hobby, its continuance and relevancy is important. Part of keeping our hobby alive is the continual stream of newcomers. Take it upon yourself to welcome visitors to the field and to understand what interests them. Perhaps you will bring in a new pilot!

from *Skywriter*
Skymasters Radio Control Club
Mark Smith, editor
Lake Orion MI

Does Radio Control flying qualify as exercise?

By DALE PALMER

Is the flying of Radio Control (RC) aircraft considered adequate exercise? Arguments for and against are described below.

Almost every flier gets up at 6 a.m. to fly in the mild breezes of dawn. Problem: A person has to get up more than once before they are considered to be doing sit-ups.

RC fliers tend to have larger thumbs. Problem: There is no known association between cardiovascular fitness and large thumbs.

RC fliers often bend down or squat near their airplanes. Problem: It has been noticed that once they are down, they have a hard time getting up.

Some of the terminology sounds like exercise. For example, sport aerobatics, fuel, or gear. Problem: Terminology in and of itself is insufficient evidence of an adequate aerobics exercise program.

RC fliers often are seen walking in the woods. Problem: Generally, they only walk in the woods once a quarter, and that is not for exercise but to recover a downed aircraft.

Weight lifting involves a buddy to spot the lifter. Problem: Even though club members use a "buddy box" and often "spot" real airplanes, the concepts involved are quite different than those used in body building.

In an exercise program, an individual is known to sweat after about 20 minutes. RC fliers also are known to sweat after about 20 minutes. This is the only assertion where similarities exist between exercise programs and RC flying.

People who exercise usually have better eyesight. Fliers often have to see at great distances but generally cannot tell whether the object they are looking at is right side up.

Persons involved in exercise programs often are fixated on building the perfect shape. Similarly, RC builders are fixated on achieving the perfect shape, but in this case, we are talking about the aircraft, not the person. The individual may actually be way out of shape.

Those involved in exercise programs are concerned about weight gain. RC builders are equally concerned about weight gain, but again the focus is on the aircraft.

People who are successful in exercise programs generally work out at the same time of day, five times a week. RC fliers can be found at the field on the same days and times.

Conversations among those who exercise regularly often is laced with letter and number combinations, (B-6, B-12, the B complex). Similarly, RC flier conversations contain letter and number combinations (B-52, P-26).

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

TIP TIME

Testing your transmitter

You can tell if your transmitter is working, even if you don't have a receiver hooked to a servo nearby. Turn on a television to channel 3 or 4, turn on the transmitter, and wiggle the sticks. You should hear a change in the buzzing sound if it is working. This trick works for AM or FM, but it does not work for PCM.

Common causes for no transmitter output could be a dead internal fuse, which may not be easy to find, or a bad connection to the antenna, which is easier to fix.

Another cause could be loose cells in a clip as is sometimes the case with transmitters using alkaline cells. To be safe, it is recommended that only soldered-up batteries be used.

from the Winnipesaukee Radio Controllers
via *Talon Tales*
Schoolcraft SkyHawks R/C Airplane Club
Schoolcraft MI

CLEVISES: A note to the unwary

By PETE YOUNG

Last summer I lost elevator control of an Almost-Ready-to-Fly (ARF) trainer. The airplane stopped responding normally to elevator commands, and pitch control eventually disappeared entirely. I wasn't able to return the airplane to the flying field, and it ended up in the big swamp where it stayed for several months before anyone found it.

The root cause of this mishap was that the elevator's nylon clevis had stripped out and thus, all elevator control was lost. The airplane was on its third flying season, by the way. So, one lesson is replace nylon clevises with metal ones, especially on elevators, which see extremely high air loads.

This past week I was flying a new ARF trainer. I had replaced the kit's plastic clevises with metal ones. On its first flight, the airplane started requiring more and more nose-up trim, the reverse of how a gas airplane acts as it burns fuel. An alarm went off in my head, triggered by memories of last summer's incident. I immediately chopped throttle and landed after less than two minutes of flight time.

On final approach, the airplane started pitching over more and more, despite my holding full back stick and back trim. Although I thought for a moment the airplane was going to dive straight in, I was able to bring the nose up sufficiently to make a hard landing with minimal damage—a sheared off landing gear plate. I was lucky the aircraft wasn't totaled.

The cause of this incident was the DuBro metal clevis had stripped the threads off the kit's threaded rod linkage, a variation of last summer's problem. I recalled that I had forced the DuBro clevis on, but as I had done this in the past with no problems noted, I didn't think anything of it.

It turns out that most ARF trainers these days have 2-millimeter threaded rod linkages and matching plastic clevises. If you replace the plastic clevises with DuBro or Sullivan metal clevises, you'll have a mismatch between the metal clevises' 2-56 threads and the kit's 2-millimeter threaded rods. By the way, metal 2-millimeter clevises aren't a common hobby shop item. Common ones are either 2-56 or 4-40.

The remedies are easy. You can solder on a 2-56 (or 4-40) threaded rod, using silver solder and solder couplers (not electrical solder!). If you don't like to solder, you can replace the 2-millimeter linkage stock completely. Simply replacing the original plastic clevis with a metal one isn't a good solution.

from *CRRC Flight-Log*
Charles River Radio Controllers, Inc.
Michael Cormier, editor
Waltham MA

How did we survive?

According to today's regulators and bureaucrats, those of use who were kids in the '40s, '50s, '60s, '70s, or even the early '80s, probably shouldn't have survived.

Our baby cribs were covered with bright colored lead-based paint. We had no childproof lids on medicine bottles, doors, or cabinets, and we rode our bikes without helmets. As children, we would ride in cars with no seatbelts or airbags. Riding in the back of a pickup truck on a warm day was always a special treat. We drank water from the garden hose and not from a bottle. Horror! We ate cupcakes, bread and butter, and drank soda pop with sugar in it, but we were never overweight because we were always outside playing. We shared one soft drink with four friends, from one bottle, and no one actually died from doing this.

We spent hours building go-carts out of scraps and then rode down the hill, only to find out we forgot the brakes. After running into the bushes a few times, we learned how to solve the problem. We would leave home in the morning and play all day, as long as we were back when the streetlights came on. No one was able to reach us all day. No cell phones. Unthinkable!

We did not have Playstations, Nintendo 64, X-boxes, or video games at all. No 99 channels on cable, video tapes, surround sound, personal cell phones, personal computers, or Internet chat rooms. We had friends! We went outside and found them. We played dodge ball and sometimes, the ball would really hurt. We fell out of trees, got cut, broke bones and teeth, and there were no lawsuits from these accidents. No one was to blame but us. Remember accidents?

We had fights and punched each other and got black and blue and learned to get over it. We made up games with sticks and tennis balls and ate worms, and although we were told it would happen, we did not put out any eyes nor did the worms live inside us forever. We rode bikes or walked to a friend's house and knocked on the door, or rang the bell, or just walked in and started talking.

Little League had tryouts, and not everyone made the team. Those who didn't had to learn to deal with disappointment. Some students weren't as smart as others, so they failed a grade and were held back to repeat it. Tests were not adjusted for any reason.

Our actions were our own. Consequences were expected; there was no one to hide behind. The idea of a parent bailing us out if we broke a law was unheard of. They actually sided with the law. Imagine that!

This generation has produced some of the best risk-takers, problem solvers, and inventors ever. The past 50 years have been an explosion of innovation and new ideas. We had freedom, failure, success, and responsibility, and we learned how to deal with it all. And to all of you who are part of this generation—congratulations!

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

Making successful crosswind landings

By GARY CHUDZINSKI

During the past year, I've heard a number of comments regarding taking off and landing in crosswinds. Many of these pilots ground themselves if the wind is blowing across the runway. This is unfortunate because pilots can overcome the difficulty with understanding and practice of crosswind operation.

The first ingredient for successful operations is adequate rudder. Your rudder can't be too large, but it can be too small. Usually kits have an adequate amount, but you should be looking at 40-50% of the total vertical flying surface for excellent response. This should handle crosswinds in the 12-15 mph range.

The other, and most important element, is pilot input. In full-scale flight, pilots are taught three distinctive techniques: crab, cross-controls, and a combination of both. These techniques apply to models as well.

Crab: This is the simplest maneuver to perform. You turn the aircraft into the wind to maintain a straight line coincident to the runway centerline. This is accomplished immediately after rollout approach upon landing. This track is maintained with small corrections until landing. At touchdown, rudder is used to straighten the ground path, and (most importantly) aileron is applied as if banking into the wind and held until rollout is complete.

Cross control: This is definitely more difficult but is more professional and personally rewarding. After rolling out on final approach, apply and hold aileron into the crosswind with sufficient opposite rudder to maintain aircraft heading aligned with the runway heading. Standing on the ground (not in the cockpit) makes estimating the amount of control more difficult. So, start out with 1/8 to 1/4 application of each stick. Again, aileron into the crosswind, rudder opposite, and you are cross-controlling.

Apply enough aileron to maintain track to the runway and continue to hold it, gradually increasing the amount if necessary until landing is complete. As with crabbing, rudder control is used for steering after all wheels have touched down. For touchdown in a crosswind, do not flare as much. Fly the model onto the ground while retarding the throttle. Remember, do not stop flying the aircraft until it comes to a complete stop.

Combination: This method uses both techniques with less amounts of each.

I want to comment on two more areas of crosswind operations—taxiing and takeoff. In many ways, the same considerations are given for wind direction and velocity.

Taxiing: Those of you who have flown full-scale, light aircraft are instructed to know the direction and intensity of the winds before taxiing. This not only confirms the runway is in use, but provides you with information for safe ground taxi. Control input while taxiing in a light aircraft is extremely important for control, and in extreme cases of wind, keeping the wheels on the ground.

The same considerations apply to our models, especially the light, high-wing types. The whole idea is to apply control input to keep all wheels planted firmly on the ground. For example, if you are taxiing into the wind with a taildragger, apply aft stick to keep positive pressure on the tail wheel. The reverse applies to a tricycle gear. In a tailwind, use forward stick for the conventional and aft stick for trike. For crosswinds, apply aileron into the wind. From an aerodynamic standpoint, you are shaping the control surfaces to give you a lift advantage, however slight it may be.

Takeoff: Like it or not, cross-controlling is the only way to make a safe, straight, good-looking takeoff. You have done it many times but may not have thought of it in these terms. A good technique is to taxi to (using the information above) and lineup on the runway centerline.

Before increasing the throttle, think about using the ailerons to keep the wings level and the rudder to track straight through the takeoff. Initially, apply about one-half aileron stick into the crosswind.

As you increase throttle, the aircraft picks up speed, which means the controls are generating more and more lift. With the increase in lift, less aileron is needed. Meanwhile, continue to track straight with rudder. As the aircraft cleanly breaks ground, keep the wings level and use enough elevator for a consistent rate during the climb. Slowly take out all rudder and continue your flight. Congratulations! You look great!

Although somewhat confusing and thought-provoking at first, talk yourself through these techniques, then give it a fair chance with practice.

Remember, the two most important maneuvers of flight are takeoffs and landings.

from *Wingflaps*
Windom Eagles Model Airplane Club
Bob Byers, editor
Windom MN

Hymn #365

A Southern minister was completing a temperance sermon. With great emphasis, he said, "If I had all the beer in the world, I'd take it and pour it into the river."

With even greater emphasis, he said, "And if I had all the wine in the world, I'd take it and pour it into the river."

And then finally, he said, "And if I had all the whiskey in the world, I'd take it and pour it into the river."

Sermon complete, he then sat down.

The choral director stood up very cautiously and announced with a smile, "For our closing song, let us sing Hymn #365, "Shall We Gather at the River."

from *Flite Lines*
Casa de Aero RC Club
Jerry Gill, editor
Prescott AZ

Tips on re-covering your airplane

By KEN CHADWICK

Want to re-cover your Almost-Ready-to-Fly (ARF) airplane? Here's what I did. I wanted a stick-type airplane for general sport flying. I found a likely candidate at our club auction—a .60-sized red ARF with the standard stick markings, three servos, and an older engine. The airplane seemed well built and structurally sound, but I noticed that some of the covering was coming loose. It was sticky-backed covering, similar to contact paper.

Fuel had seeped under the edges and turned the adhesive to goo. The fuselage fuel tank compartment and some of the forward servo box were fuel-soaked. The firewall had a hole cut in the center for the cap of the fuel tank to go through and had not been sealed off. The outside of the firewall was not fuel-proofed.

I removed the engine and other hardware from the fuselage. To treat the fuel-soaked area, I put two cups of dry plaster powder into the compartments. I then cut some foam to fit into the compartments, with at least 1/4-inch space all around. I packed the powder into the corners, under and between the foam and the sides of the fuselage, then set it aside to work (one or two weeks).

I had a learning experience working on the wing. First, I removed all the hardware, then the covering. The covering adhesive was very strong and did its job well when it was new. I tried the conventional means of removal using a heat gun. The covering has a low melting point so it blisters up and has no strength when heated.

When peeling the covering at a cooler temperature, sometimes a little balsa came off with it. This turned out to be a labor-intensive job. Most of the covering came off in small chunks or even in tiny pieces. Once the covering was off, I made repairs to the structure of the wing. Some of the wing ribs were broken and cracked, and the balsa that came off had to be replaced using CyA glue. I had to remove the goo that was left behind. I used acetone with steel wool to scrub it off. The goo surrendered to the acetone easily. Follow up with a clean rag and acetone wipe down. *Note:* Do this outside or with very strong ventilation. It's definitely a fire hazard. Rubber gloves are a must to protect your hands.

Sand the entire wing surface with 200-grit sandpaper and reclean any goo spots you missed. Use some filler or light spackling for any surface dings or irregularities, then set the wing aside to dry out. When the filler is hard (6-8 hours), sand the places again to smooth them out. Wipe the surface with a tack rag just before applying new covering. Follow the covering manufacturer's recommendations. I didn't use any Balsarite, and there was only one place where the new covering wouldn't stick. This was remedied by putting an application of CyA on the area and immediately wiping it off. The covering stuck to the film of cured CyA.

When the time is right, clean the oil-soaked powder out of the fuselage. Using the same procedure as the wing, remove the covering from the fuselage, clean, sand, and fill any imperfections. Next, I set the fuselage on my table and, using a level and blocks, checked the incidence of the wing to the horizontal stabilizer. I found the stabilizer was tilted to one side and slightly cocked. The tail feathers originally had been installed with epoxy.

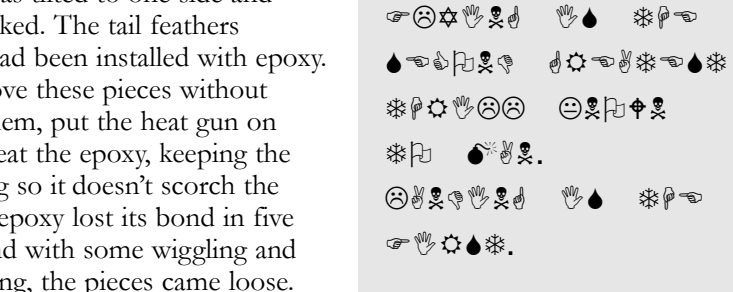
To remove these pieces without breaking them, put the heat gun on high and heat the epoxy, keeping the gun moving so it doesn't scorch the balsa. The epoxy lost its bond in five minutes, and with some wiggling and gentle pulling, the pieces came loose. Keep heating the excess epoxy and scrape with a scrap of pine or other suitable wood.

To reinstall the tail, block, and level the fuselage as before. Dry fit the stabilizer and check for proper incidence. Use T-pins through the stabilizer to hold the correct position on the fuselage. Remove the stabilizer and apply five-minute epoxy. Replace the fuse. Check the incidence and wipe off any epoxy that squeezed out and let it cure in place (30 minutes). Check the angle to the horizontal stabilizer and vertical fin with a small carpenter square. The centerline must be parallel to the centerline of the fuselage. Check with a long straight-edge. Epoxy and reinstall the vertical fin blocked in place to maintain the correct position. Wipe off any excess epoxy and allow it to cure. Sand the filled spots, tack rag the structure, and re-cover the fuselage.

To fix the fuel soak-in problem, I used modeling clay or paraffin to fill the mounting, push rod, and fuel line holes in the firewall. I then put a thin coat of CyA on the outside of the firewall followed by a coat of five-minute epoxy, overlapping the edges of the covering. When the epoxy cures, clean out the holes and reinstall the fuel tank with a bead of silicone sealer (enough to fill the gap) around the base of the cap. Allow a day for the silicone to cure, then reinstall the hardware and radio gear and check the center of gravity. Charge the batteries and you're ready to go to the field.

from *TRCC Noise*
Tuscon Radio Control Club
Chuck Brooks, editor
Tucson AZ

Can you solve this?



CLUES:

- **Each symbol represents a letter of the alphabet.**
- **There are 13 words in the saying.**
- **The saying relates to aviation**
- **The letters *b, g, k, m, p, u,* and *y* appear only once.**

Solution is on page 13.

from *Tangled Lines*
Greater Detroit Soaring and Hiking Society
W. Hutching, Bud Manning, editors
Oxford MI

Determining center of gravity on your aircraft

By JERRY NEUBERGER

A number of important factors, such as wing area, wing loading, and tail volume percentage, make an airplane fly well; however, most airplanes can fly with many of these parameters out of norms.

The center of gravity (CG), on the other hand, is critical. If the CG is too far forward, the airplane will be very stable while flying, but as it slows down to land, more up elevator is required to hold the excess nose weight up until the elevator either runs out of travel or stalls. If the CG is too far aft, the airplane will be unstable and uncontrollable.

Figure 1

So, how do you figure out the CG? It's pretty easy, actually. Acceptable CG ranges for almost all airplanes is between 25-33% of the Mean Airfoil Chord (MAC) so the hardest part of figuring CG is the "mean" part. On an airplane with a constant chord wing, such as a Cub (see Figure 1), the MAC is easy to figure since the chord of the wing is constant. Just measure the back 25-33% of the chord from the leading edge and that's where the airplane should balance. If the chord is 10 inches, the airplane will be in balance if the CG is between 2.5 and 3.3 inches back from the leading edge.

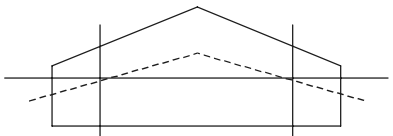


Figure 2

Not all wings have constant chords and that is where the "mean" part starts to get complicated. Figure 2 shows a wing with a leading edge taper so the chord at the root is considerably larger than the chord at the tip, causing the "mean" chord to be somewhere in between the two. To figure the MAC, measure back 25-33% at the root and mark it. Then measure 25-33% at the tip and mark that. Connect the two marks with a dotted line. Now, measure the wingspan from the center of the wing to the tip (include the part of the wing that is covered by the fuselage). Go half that distance to get the mean point on the wing. Do the same for the other side of the wing and draw a line between the two points. Now you have the balance point of the airplane. Notice that the balance point at the tip is nearly at the leading edge of the wing so it's critical that you mark where the balance point is. If you just measure back 25% from the leading edge at the tip, the airplane will be nose-heavy. Although Figure 2 only shows a tapered leading edge, this method also works with trailing edge taper and even wings with both leading and trailing edge taper.

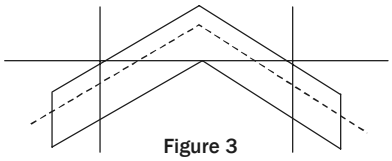


Figure 3

Figure 3 shows a wing with sweep, and once again, figuring the CG is a simple matter of finding the 25-33% point at the root and tip, then finding the point at half span and drawing a line between the two. Notice that the CG is well ahead of the tip leading edge and with more sweep, can actually be behind the root trailing edge. Once again, it's important that you know where on the wing you're going to balance the airplane.

The most complex wing design you'll encounter is shown in the next diagram (Figure 4). This wing has a constant chord section, a tapered section, and sweep, so how do you figure the MAC? Interestingly enough, it's just as simple as any of the other types of wings. You find the MAC of the constant chord section and the MAC of the swept and tapered section. Then you find the mean point on the wing. The only thing that could get you in trouble here is forgetting to include the part of the wing covered by the fuselage. The sweep angle in Figures 3 and 4 is exactly the same, but you'll notice the CG line is further forward on the wing with a constant chord section. This is the effect of the constant chord area reducing the total area of the swept section.

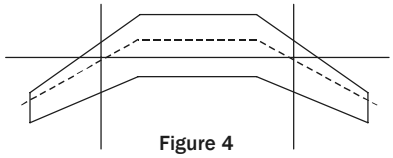


Figure 4

How does this work with a biplane and two wings? Once again, the answer is simple. Figure 5 shows the wings of a biplane (bottom and middle ovals) looking from the tips of the wings. To figure the MAC on a biplane, just consider both wings as a single wing for CG purposes and measure from the leading edge of the forward wing (usually the tip wing) to the leading edge of the aft wing. Consider the span to be a single wing (shown by the top oval in Figure 5. Then, use the 25-33% of that total as the CG location. Notice that the balance line is well aft of the 25% of the top wing and well forward of the 25% of the bottom wing.

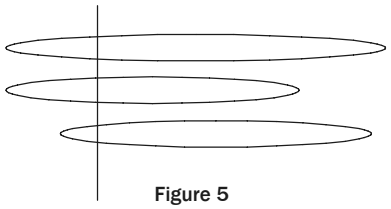


Figure 5

Only one wing type will not work with this system—a delta wing. This type of wing has considerable aft shift of the center of pressure so using this method will result in the CG being much too far forward. There must be some chord at the tip for this to work.

from *The Beacon*
Miramar Radio Control Flyers
Dick Doucet, editor
San Diego CA

"I fly because it releases my mind from the tyranny of petty things."

Antoine de St-Exupery

PRECISION AEROBATICS: Investigating a crash

By EARL HAURY

One of the less enjoyable aspects of our hobby is the occasional crash. I don't accept that all models will eventually crash; it doesn't have to happen. The reality is we all seem to experience a crash, and it's a reminder of the complexity of both the aircraft and the endeavor of flight. Inattention to any detail of the airplane's system can lead to its demise. Exceeding one's piloting skills can have the same results.

So a crash occurs. Hopefully, the only thing hit is the ground. First, there is a moment of disbelief. Then, the sharp pinch of a wallet biting into our backsides returns us to reality. Next, emotion sets in. Some just cry a little (that pinch hurt). Some become accusatory, as they know it must be someone else's fault. Then comes anger, rage, and embarrassment as we realize that either our piloting skills or the equipment failed. Now what?

First, there's the long walk to the crash site. Take your time and be sure you've turned off your transmitter and replaced the frequency pin. Most crashed airplanes don't leave the crash site. Now is the time to make something positive happen and learn from an unpleasant experience.

Try to reconstruct the last moments of flight while they are still fresh in your mind. Did you fly it into the ground with sticks bent in the "right" direction while the airplane sped downward in the "wrong" direction? Guess who was wrong!

Did the thing quit responding in one axis? Suspect servos, leads, linkage, and other things related to that axis. In all axes? Suspect a loss of battery power, or control hold if using PCM. Did it go nuts in all axes? A sign of interference could have caused a frequency conflict. Did the aircraft disassemble itself in the air? Maybe a gentler stick action or more adhesive during assembly were in order.

Let me digress a moment. In the event of a frequency conflict, there are obligations to fulfill. The person with the frequency pin wins. The person without is responsible. This is not just an ethical issue but a legal one as well. Operating a transmitter within the confines of a frequency-controlled area without the proper pin is negligent. The good news is that many folks have liability insurance, which will compensate the injured party when they commit a negligent act. If ever in the embarrassing position of shooting down someone, don't fail to consider a call to your renters/homeowners/ personal liability carrier.

Now we've reached the smoking hole in the ground. Take a good look at the carnage. Look at what survived and what didn't. Make sure the battery pack isn't hot. Get the battery disconnected to prevent shorts. The engine and muffler also may be hot. Be careful not to add burns to that backside bite. Pick up everything and place it into a trash bag. Resist the urge to break things further. Take an inventory to ensure you've recovered all the components.

The information you get from investigating a crash can help you in the future.

Back to the pits for a preliminary post-mortem. Resist the urge to rip out the "good" stuff and throw the rest into the trash. Someone will just pull it from the trash, make repairs, and soon be flying in front of you. They may tease you a little about the "gift."

Look over everything for obvious signs of failure pre-crash. Look at what failed during the crash. Things that stayed together were probably too heavy. Things that came apart are supposed to do that in a crash. The mud in our area will corrode aluminum within hours. Quickly wash any mud from metal parts; water is fine on the engine as it has mud inside anyway. Take everything home and forget it for a couple of days.

Once the sting has worn off, do a real postmortem. Determine what still works and what doesn't. Take the rear cover from the engine and wash it thoroughly with a solvent and oil it well. Take a good look at the airplane. Is it totaled? If so, salvage all hardware and save the larger parts. If it doesn't look bad, why not get the jump on the "dumpster divers" and fix it?

Don't let damaged hardware creep into the junk bin. Send items to the proper service center for repair or order parts and fix them yourself. Always trash a receiver involved in a serious crash, even if it seems to work. Fixing a receiver is courting disaster.

If the airplane is totaled, take the larger pieces and investigate. Can you pull the hinges out without much wood attached to them? How about the control horn hard points? Determine how well-adhered the skin is on a foam wing.

See how much force it takes to break a wing at half span and the center. How much crushing and twisting force can fuselage sections withstand? How much flex will a pushrod take? How good are the glue joints at the firewall and wing mounts? A great deal can be learned about material, adhesive, and structure strength in this way.

You may never know what caused a system failure crash. The information gleaned during post-crash investigation can help you make sound choices during the next building project. Even in the case of an Almost-Ready-to-Fly, the information is useful in the selection of a replacement.

from *The Feedback*
Fort Bend R/C Club
Charlie Caulkins, editor
Sugar Land TX

Solution to puzzle

Hints & Tips

Information you can use

Stronger stabilizers

It is common to find broken stabilizer leading edges under the covering of built-up stabilizers where the triangular stabilizer leading edge doubler ends. This is because a rib is located at that point. That combination makes the doubler rigid and concentrates the bending loads of the leading edge in a very short length. Moving the rib away from the end of the doubler allows the end of the doubler to flex with the leading edge, spreading the bending loads over a greater length.

Plug those pin holes

When working with fiberglass, try the following methods. Wash the component with soap and water and brush on one or two coats of nitrate dope with talc or talcum powder added. Stir well to dissolve the powder. Nitrate is used rather than butyrate because it adheres well and anything can be applied over it. Sig nitrate is available at most hobby shops. Another method of filling pin holes is to using hobby poxy stuff. Thin it with a good lacquer thinner and brush it on. When dry, after a light sanding, the fiberglass is ready for primer and paint.

from *The Sac Dope Can*
Suburban Aero Club of Chicago
Wayne Bielski, editor
Chicago IL

Repairing loose firewalls

There are many times that you have to repair a loose firewall or tail section on an airplane. Maybe it's not completely out—just loose, and you need to reinforce the joint. One of the best ways to make sure you have a good joint is to heat the epoxy with a heat gun after it is applied. This will almost liquify the epoxy and let it seep into the joint to ensure a solid repair. I also recommend using triangle stock to reinforce the joint, particularly on firewalls. One warning though—be sure you do this with a long-working resin. The heat will speed up the reaction. If you are using five-minute epoxy, it may set up before you can finish your work.

from *Mission Briefing*
Magic Valley Air Force
Gary Nelson, editor
Jackson TN

Nylon bolts

If you've ever had trouble getting nylon bolts started when attaching the wing or other major subassembly, try this. Bevel the threaded end of the bolt so it tends to be self-centering when you're trying to get it started. The easiest way to bevel the bolts is to stick them in one of those school kit handheld pencil sharpeners and twist.

Control surface hinges

Nylon control surface hinges were a boon to Radio Control models. Unfortunately, none of our adhesives stick to them very well. For safety's sake, you should "pin" all your hinges after you assemble the control surfaces to the airframe. Do this by drilling a small hole through the structure and through the hinge material. Insert a round toothpick in the hole and glue with CyA or aliphatic resin glue. Some planning is necessary for covering or finishing to avoid the hinge "pins" looking like an afterthought. I usually install the hinges in the main structure first, pin them, and sand everything smooth. Next, cover the model as you normally would. Lay a strip of covering material on the leading edge of each of the control surfaces. After ironing on this leading edge strip of material, install the control surface and pin the control surface side of the hinge. Now cover the control surface with your covering material. The result is completely pinned hinges without sacrificing a nice covering job.

Radial engine cowling

Some two-liter soda bottles have a black plastic reinforcement on the bottom. This piece makes an excellent radial engine cowling for your next project.

from *The Flypaper*
South Bend RC Club
Jack Allinger, editor
South Bend IN

Washout

Have you been coming in long, low, and slow, only to have one wing tip or the other stall? Does the airplane roll to one side faster than any other time?

To prevent this, you need to check your washout. Lay your wing halfway on a flat table and hold it down near the center. Measure how high off the table the leading edge is and then measure the trailing edge.

Compare this side of the wing with the other. If the leading edges and the trailing edges are both flat down on the table and both sides are the same, there is no problem. If you have one trailing edge up and the other down, you will have stalls. The wing that is down is the one that will stall first. If you want good landings, give both wing tips up

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Hints and tips, *continued from page 14*

to a 3/4-inch washout. That means warping the wing to have the trailing edge stand up at the tip. With washout at the tip, when you come to stall speed, the center will stall first and the tips will follow. If the tips are the same, your airplane will stall at the stall speed but won't be as likely to roll.

from *Talon Tales*
Schoolcraft SkyHawks
R/C Airplane Club
Schoolcraft MI

Installing landing gear

When installing landing gear onto the fuselage with plastic or nylon bolts, place a thin 1/16 thick sheet of light plywood or balsa between the aluminum gear and the bottom of the fuse. This way, if by chance you land hard and sheer the plastic screws, you have a better chance of getting a grip on a section of the broken plastic for easier removal.

from *Airmailer*
Benton County Radio Control Club
Jim Trump, editor
Corvallis OR

Spray paint

If you spray paint your model and then see a couple of small spots that need touched up, don't respray the area. Instead spray a little into the can lid and use a small brush to put that paint on the touch-up spot.

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

Workshop hints

Over the years, people pick up several modeling tips that are useful, especially to the less experienced modelers. Here are a couple shortcuts.

1) An ordinary potato peeler is a great tool for carving or roughing into shape leading edges, rounded nose pieces, or any solid balsa. The peeler will only cut so deep, making carving to shape a breeze.

2) When installing CyA hinges, mark and slot balsa as you normally would. Then take a T-pin and insert through the hinge at the center so the hinge can be pushed only halfway into the surface you are hinging. This keeps the hinge from being pushed too far into only one surface. Once the control surface is in place, then remove the T-pin. Take your thin CyA with a small applicator tube and place three or four drops onto each hinge while keeping the surface pushed tightly against the trailing edge. Flex the control surface slightly and the CyA will soak right in. While you have it flexed, add three or four more drops on each hinge. As long as the CyA is being wicked in, you're okay. Do not put on any more than this or you will have it all over the MonoKote and your fingers.

Vinegar

To remove epoxy from yourself safely, use white vinegar. It's smelly, safe, and very cheap!

Flexible sanding block

A flexible sanding block can be made by contact cementing sandpaper to one side of a urethane sponge. Your sanding block can conform to any curve.

Wire bending

When bending identical parts from small gauge wire, tape the wires together and bend both simultaneously.

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

Handy soldering jig

Here's an easy way to solder a threaded coupler. Place the coupler in the jaw of a wire stripper and stretch a rubber band around the handle. This provides the needed tension to hold the coupler in place while soldering.

from *The Pilot's Log*
Fort Worth Thunderbirds R/C Club
Charles Osborn, editor
Fort Worth TX

"Life is tough; It's tougher if you're stupid"

Educated kids at work

Recently, when I went to McDonald's, I saw on the menu that you could order six, nine, or twelve Chicken McNuggets. I asked for a half dozen nuggets.

"We don't have half dozen nuggets," said the teenager at the counter.

"You don't?" I replied.

"We only have six, nine, or twelve" was the reply.

"So I can't order a half dozen nuggets, but I can order six?" I asked.

"That's right." I shook my head and ordered six McNuggets.

Police interrogation

Police in Radnor, Pennsylvania, interrogated a suspect by placing a metal colander on his head and connecting it with wires to a photocopy machine. The message "He's lying" was placed in the copier, and police pressed the copy button each time they thought the suspect wasn't telling the truth. Believing the "lie detector" was working, the suspect confessed.

Cruise control

I was in a car dealership a while ago when a large motorhome was towed in to the garage. The front of the vehicle was in dire need of repair, and the whole thing looked like an extra in *Twister.* I asked the manager what had happened. He told me the driver had set the cruise control and then went in the back to make a sandwich.

Idiots and computers

My neighbor works in the operations department in the central office of a large bank. Employees in the field call him when they have problems with their computers. One night, he got a call from a woman in one of the branch banks who had this question: "I've got smoke coming from the back of my terminal. Do you guys have a fire downtown?"

from the newsletter of
Mississinewa Skyhawks
Dave Hecker, editor
Wabash IN

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