Servo Chatter

January 2008, Issue #127
Official Newsletter of the SCCMAS "Tomcats"
Located in Morgan Hill, CA

www.sccmas.org
AMA Club Charter #110

Next Meeting: Thursday, January 31, 2008 at 7PM. Location: Hayes Elementary School, San Jose, CA.

Cover photo: Don Coulter demonstrates Monokote application techniques at the November Members Meeting. Pat Rose photo.

Bud Kanemoto flies his Super Cub ARF.
Brison 2.4 power, Balsa USA floats.
Jim Patrick photo.

In This Issue

Flyin Fast - President's News
By Michael Luvara

Happy new year to all. As the old cliché goes, boy does time fly when you are having fun. As always, another year has started and we look forward to another great year at the SCCMAS in 2008.

For those that missed the last club meeting in November, Don Coulter put on a covering demonstration and it was well received by the attendees. He has also put some outstanding articles together on the club website which show many tips and tricks for covering. At the January meeting, he will be doing a demonstration on vacuum forming. Come on out and check out the demonstration.

Steve Smith has engineered a great contest/ event calendar for 2008. You'll notice some changes in the events that we will hold at the SCCMAS, along with the addition of a couple new ideas. One is a helicopter fly-in which should generate some great international interest at the SCCMAS and was formerly held at Bayside R/C club. See Steve's column in this issue for details.

Periodically, it comes to our attention that we must go over some of the operating procedures at the SCCMAS. One of the items that of discussion lately are the access gates to the SCCMAS facility. Who opens/closes them? How do I open them, etc? As a SCCMAS member, you have access to the field from dawn till dusk, 365 days a year. Obviously, there are exceptions to this where items of safety, county concerns, etc would override this. Any SCCMAS member can open the outer and inner gates when they arrive at the field during daylight hours. The Rangers typically open the outer gate in the morning, but you may do so if you arrive before they do. The combination for the gate lock is provided to you in your renewal package each year. Please be sure to open the lock, clasp it closed (so it will not fall off the chain) and spin the combination dial. We have lost a lot of locks over the years this way! When you leave the field (if you are the last person out), please lock the inner gate (the one to the SCCMAS). You do not need to lock the outer gate by the orchard. The Rangers make their daily routes and lock this one up, along with opening it in the morning. If you have any questions about the above, feel free to contact any board member or myself for clarification.

Name badges… Many of you have seen the white name badges that SCCMAS members wear. These are given to members who have earned their wings. First off, I must admit that we have been at fault on not making these badges for some time and I take responsibility for dropping the ball on this. After trying several vendors and some hard work by Tim Jones, we now have a lineup on these badges again. As of this writing, we have gone through the list of who we had listed as needing a badge and have mailed them to members. If you feel that you are supposed to receive a badge and do not receive one by the next club meeting, please contact me and we will put you on the next set to be made. I know many of you have waited for awhile and we appreciate your patience while we got things settled.

Along with your renewal form this year, you should have found a survey to fill out. Please return this to us if you haven't already. This survey is our rudder and guidance for the direction of the SCCMAS. If we can do our best to meet the wishes of the majority, then we are on the right path. Thanks again for your support and we look forward to having a great flying season in 2008.

President continued on page 7.

From the Editor

By Pat Rose

Up to date personal information.

If you happen to move, change your email address, or have a new telephone number—let one of the officers know, please. Why? For instance, I was at the field today when a member handed me a transmitter case with a transmitter in it. I called the Pres and got the owner's telephone number that the club has on record. I called the owner's telephone number to let him know that we had his transmitter. Unfortunately, the number was out of date. The member's name and address were on the transmitter case, but no telephone number. Another reason: Sometimes I will take photos of a member's plane in flight. My favorite distribution technique is to email the photo to the member. If the email address is out of date, this will not work.

Don Coulter a big SCCMAS contributor.

If you were at the last member meeting, you were delighted at Don's demonstration on using Monokote to cover, rather recover, his ARFs. I know that Don has posted most of this information on the Forum, but I could not help myself and invited Don to supply the same basic information in Servo Chatter. I hope you enjoy this information as I spent a lot of time editing this multi page article, a first for me. I have also invited Don to present an article on glassing a model in the future. This will help me as I soon plan to glass a plane. As I see it, glassing a plane really contributes to its strength if the plane is a balsa sheeted plane, such as a war bird.

Cabin Fever

I don't know about you, but this long period of rain and cold weather is giving me a serious case of cabin fever. You can imagine I have spent a lot of time on the simulator. To improve the graphics over the stock card supplied with my PC, I purchased a Ge Force 8600 GTS. Much better graphics—smooth lines and I can see the plane farther out. I find it worth upgrading the graphics card about every two years.

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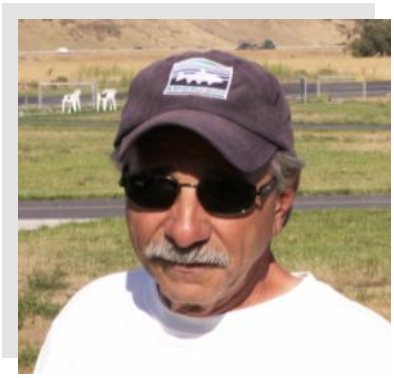
Upcoming Meeting: Thursday, January 31, 2008, 7 PM

The next meeting will be held at Hayes Elementary School, Thursday, January 21, 2008, 7 PM. Raffle prizes will include the usual - a radio, a kit, adhesives and lots of other stuff.

Bring your latest project for show and tell and receive a free raffle ticket. Hot coffee and donuts during the break. See map on page 20 to Hayes school.

Future meeting dates: Wed. March 19th, and Thurs. May 15th.



From The Secretary's Building Board

By Rich Luvara

Tim Jones gives the Safety report.

Meeting notes for 11/28/07

There were 47 members present, 3 of which were new members: Bob Wiggins, Bob Smith, and Don Bogart. Congrats to Ron Marier for being a new solo .

Raffle

Babe Caltibiano-radio
Ron Marier-kit
Don Coulter-fuel
Don Bogart-fuel
K.Turley –fuel
Bob Smith-sanding bar and epoxy
Mike French-epoxy
Mike Siminof-toy heli
John Ribble-epoxy, glow plugs, CA glue
Norm Sly-epoxy
Sam Fairchild-glue, control cable
Bervin Britt-sanding bar and control cable
Chris Trihorn-glue and control cable

Dumb Thumb

The Dumb Thumb was won by Carlos Tripodi…took off using the wrong model memory. Plane became a drag racer, elevator backwards???

Show and Tell

Don Coulter did a great presentation ,demonstrating covering and patching techniques with Monocote and Ultracote….Rick Maida brought his newest "sacrificial race plane", an RC Dymond ARF..fiberglass fuse with a sheeted wing, GMS 120 for power and JR radio, Priced at around $160 he said it was a good quality kit. Rod Schurtz showed off his newest Super Hots, scratch built with pull/pull… lightened gear and ribs, powered by a YS 45 with tune pipe, turning a 10-6 at16,500 RPM.

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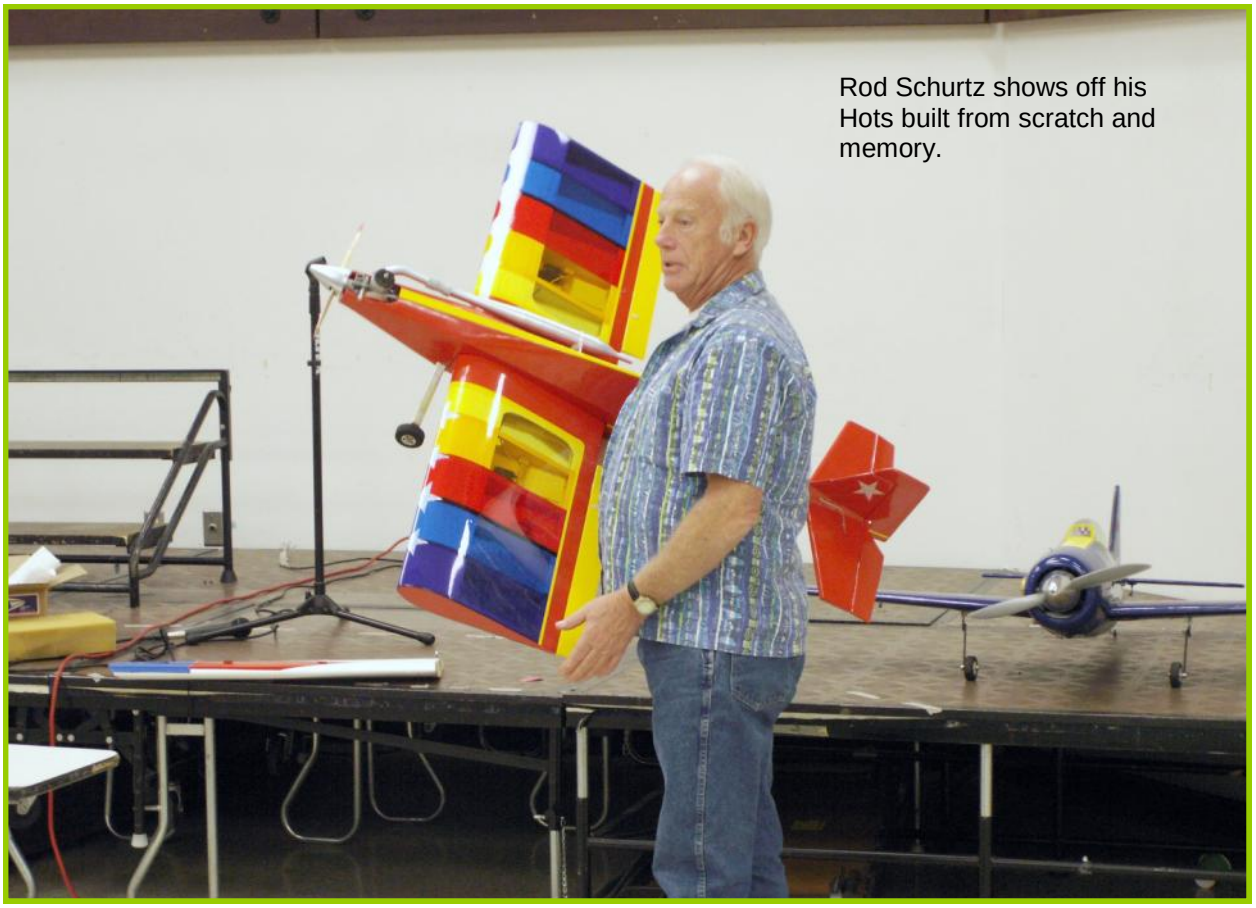
SHOW AND TELL

Rick Maida shows his RC Dymond ARF



Rod Schurtz shows off his Hots built from scratch and memory.

Safety

By Tim Jones

Well, I don't have anything in particular to bring up at this writing. I'll try to hold off with the repeat messages for a bit more. I will take this opportunity for a couple of small messages though.

I have been busy getting the new '08 club cards out. The first major mailing went out the first of the month. That mailing was about 200 member cards. The most recent was another 21. Processing of renewals will be a bit slower now. The reason is that we like to wait until we get a quantity together to process, because a card sheet has 10 cards on it. So, it's not practical to process 2 or 3 cards. So, if you're sending your renewal in now, it may take a little time to get it back to you. Be patient with us.

Like I started with, not much to go over this writing.

I'll try for more next time,

Tim

President continued from page 3.

If you have been paying attention to the AMA this year, elections were held for the presidential position. Incumbent Dave Brown has held this position for many years and it has now been handed over to Dave Mathewson, the new president. Like the political landscape in the USA, it will be interesting to see if/what changes within the AMA occur with a new administration. One new item that has just been announced is a park flyer insurance program. We will be evaluating this new program to see how it plays into the SCCMAS. As I understand it at the time of this writing, it allows people with smaller aircraft to obtain insurance through the AMA at a lower cost. I will be attending the AMA convention in January and hopefully learning more about this and any new items coming from the AMA.

Until next issue,
Michael

Training

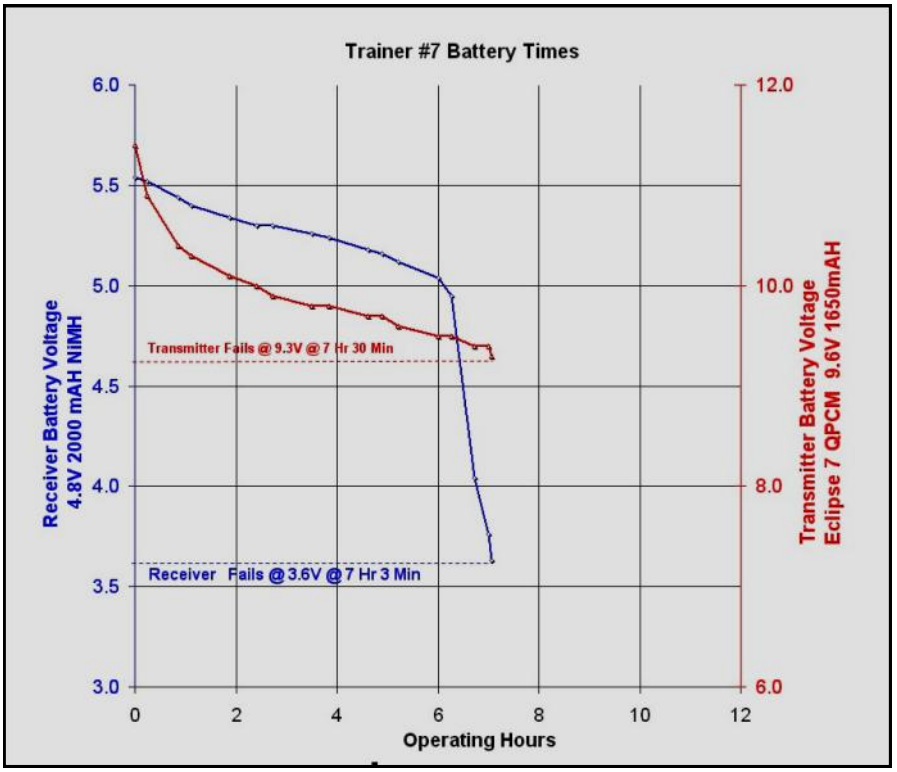
By Mike French

Battery Limits

Each time I begin a training session with a student, I ask the student to measure his plane's battery voltage prior to flight. Many times I have been assured by a previous student that they had left the charger on all night so the batteries had to be fine. The surprise came when they had accidentally turned the plane on for five hours after charging the night before. Regretfully, we have lost student's planes because the battery voltage was not what was expected and it's voltage dropped below the operating limits of the receiver before we could land. Never again! I have taken enough data on many batteries in planes and their associated transmitters to see a consistent pattern that I would like to share with you. Below is recent data from a club trainer. If you buy a standard transmitter/receiver/servo package the energy storage for the transmitter is less than that of the receiver such that the transmitter will fail first. As the pilot has an indicator on the transmitter of the impending failure, he can land the plane in time with what he has left to prevent catastrophe. But many of us buy over sized receiver batteries such that the above axiom is not always true. It is important then to know exactly what the limits are of operation of each battery in the receiver and transmitter when they are measured prior to flight.

The chart below is typical of many R/C aircraft. Notice that there is a slow decline in this receiver battery voltage from 5.6 Volts to 4.9 Volts over the first six hours of flight. However, when the battery voltage reaches 4.8 Volts there is a sudden and precipitous decline to the point where the receiver fails some 20 minutes later. This means that if you lift off with the receiver at 4.8 Volts, you may not have enough battery power to complete the flight before failure.

Training continued on page 19.



Contest News

By Steve Smith

Happy New Years to all! With the rainy weather the past couple of weeks I've spent time finalizing the SCCMAS 2008 event calendar and sending it off to the NCRCS. Several changes are in store this year. Back by popular demand is the Fun-Fly on March 22nd. This has always been an amusing event to watch and participate in. Soloed AMA pilots with any type of aircraft and skill level can participate in the Fun-Fly. The events will be chosen the morning of the Fun-Fly and scoring is setup so any skill level will have an equal chance of bringing home one of many trophies. Come out and enjoy trying your hand at some of the wacky flying drills (ask Tim Jones about Bowling!).

Adding a new twist to the event rollup this year, the SCCMAS will host the annual International Circumgyration R/C scale helicopter competition on Memorial Day Weekend. This is an open to the public three day event attracting the top R/C scale helicopter pilots world-wide. More information forth coming.

Another change in the works, due to low participation at the Giant Scale Fly-In in the past years, we have decided to morph this event into a one day Warbird Fly-In. This will be open to all AMA soloed pilots of any skill level with any R/C Warbird aircraft of any size with any engine; electric, glow, gas or turbine. Trophies will be awarded for several categories.

The SCCMAS will be participating in the annual Watsonville Airshow and the Reid Hillview Airport day this year promoting the R/C hobby and the SCCMAS, with static aircraft displays and flying demos. If you would like to help with any of these public events contact Mike Luvara or myself at contests@sccmas.org.

2008 will be another busy year for the SCCMAS. Volunteers are needed to make these events a success. Now's the time to signup. We need shack managers, shack help, BBQ help, pylon judges, lap counters, helpers for field preparation, etc. Manage the shack for one event and receive one-half off your 2009 annual dues. Manage the shack for two events and your 2009 annual dues are on the house. If you are interested in helping with any of the events contact me at contests@sccmas.org.

Happy flying,
Steve

The 2008 Events calendar

March 22	Fun Fly
April 26	RC Swap Meet
May 10	Warbird Fly-in
May 24-26	2008 International Circumgyration
May 24-25	SCCMAS at the Watsonville Airshow
June 7	SCCMAS Field Maintenance Day
June 14	Warbird Race
July 12-13	Annual Airshow
August 23	Electric Fun Fly
September 20	SCCMAS at Reid Hillview Airport
September 27	Pattern
October 11	Triangle Series T-34 Race Finals
November 1	RC Swap Meet
December 7	Toy-For-Tots

Treasurer's Report

By Jim Patrick

SCCMAS Profit & Loss
Cash Basis
November through December 2007

Ordinary Income/Expense		
Income		
Apparel sales		13.50
Food sales		210.00
Membership dues		90.00
Swap meets		230.00
Vending machine		264.00
Total Income		807.50
Expense		
Bay Alarm		135.00
Computer supplies		105.45
Food		321.53
Garbage service		368.54
Postage and Delivery		387.81
Printing and Reproduction		685.24
Repairs and Maintenance		
Janitorial Exp	55.00	
Total Repairs and Maintenance		55.00
Sanitation service		948.04
Supplies		1,121.71
Telephone		
Internet	69.95	
Telephone - Other	137.24	
Total Telephone		207.19
Utilities		
Gas and Electric	147.57	
Total Utilities		147.57
Total Expense		4,483.08
Net Ordinary Income		-3,675.58
Other Income/Expense		
Other Income		
Other Income		300.00
Total Other Income		300.00
Net Other Income		300.00
Net Income		-3,375.58

Swap Meet

1 Dec. 2007, Joanne Levy Photos

Toys for Tots

9 Dec. 2007, Pat Rose photos

Tim Stingle's 112 inch wingspan Sopwith Camel.

Mike West's Aircore flying right to left.. Yes, this plane is taking off.

Covering Tips and Tricks
By Don Coulter

INTRODUCTION

My intention is to share some tips and tricks that I use in covering, repairing and trimming using Monokote, Ultracote and other heat activated covering materials.

I have been asked quite frequently how (and sometimes *why*) I re-covered my ARFs in a different color and added trim and graphics without those pesky bubbles that pop up. While the quality of the finish covering of ARFs has improved to nearly professional results, I am the "type A" person who doesn't want my planes to look like everyone else's. I figure the time and effort saved by buying a plane that is already built justifies a little extra effort to "personalize" it.

That's *why* in a nutshell!

The following article will show some of my techniques for applying heat activated coverings and hopefully take the mystery out of how to get great results. Let's get started.

It's always best to have a plan. I look at my new plane and try to get an idea of how I think I can improve the looks. Change the color here; add a stripe there or maybe some graphics. I race T-34s and there is nothing more boring than to see 35 planes show up with the same basic white with either red, blue, or yellow trim. It not only makes it harder for the pylon judges to figure out which "red" plane just cut pylon 2 but it's also easy for you or your caller to "misplace" your plane in the frenzy. By taking a few hours to strip off the stock covering and replacing with your own color, you've made life easier for a few people and added a little class to your world. You don't have to remove all the covering! You can simply add another color or some graphics to set your plane apart.

Many ARFs these days are covered with a film that has a low tack color adhesive that is die cut to fit like a jigsaw puzzle on the particular plane. They are simply placed in the correct spot on the plane, bonded with an iron and then passed through an oven to mass shrink the film. Fortunately, the film can easily be removed by carefully pealing up a corner and then pulling off the film. Before you reapply the new color, it's often a good idea to check for loose glue joints, broken ribs and any small dents while the frame is open.

I like to use a low shrink, lightweight, spackle-like compound to fill any larger dents. Smaller dents can many times be removed by simply adding a few drops of water/ammonia mix directly on the dent. Wait a few minutes to "swell" up, and then use your heat gun or iron to "set" the wood. A light sanding over the area you are recovering with 400 grit, followed by a quick shot of compressed air and/or a good tack cloth and you're good to go!

Covering materials have come a long way since the days of silk and dope. After building the balsa framework, a modeler would brush on a coat of clear butyrate or nitrate dope and then adhere pieces of a fine paper-like material called Silkspan or similar material. After that dried, several more coats would be brushed or sprayed over the covering to shrink and seal it. Depending on how shiny you wanted the surface; many more coats of colored dope would be applied until the desired sheen was achieved. Needless to say, this was a very time consuming process!

The first major improvement I can remember was the introduction of a material called Fascal. It was a clear plastic film that had a heat activated high tack coating that you could stick to the framework and then tighten or shrink out any wrinkles with some sort of heat source. Paint could be applied to the film for color. I remember building fast combat control-line airplanes in my RV on the way down to the 1976 Nats. I was shrinking the Fascal over the gas stove! Not very safe but it got the job

done.

Nowadays, this process can be achieved with one simple application of a heat activated plastic film that has the color and desired finish bonded to it. Now we have high tech films like Monokote, Ultracote, Solarfilm, etc. To apply these films, we need some specialized tools to make the job a bit easier. In the pictures, I've assembled most of the tools and materials needed to apply the film and achieve an outstanding finish.

TOOLS AND SUPPLIES

Of course, one of the first things we need is a way

to cut the material. An X-acto knife is almost essential but I also keep on hand some single edge razor blades and a good pair of scissors. I buy my #11 X-acto blades in packs of 100, as it is very important to have a sharp edge. I can easily go through as many as ten or more blades covering a medium size airplane. There's nothing more frustrating trying to cut a clean straight line, only to have a blade "chatter" or tear the material. *Change your blades often.*

Measure twice, cut once!

A good, metal straightedge is also important. My arsenal consists of a 48" straightedge/ruler (for the long wing panels), an 18' and a 12' ruler that have a cork backing (it helps keep the film from sliding while cutting). I also keep a small tape measure on hand and a felt-tip marking pen (the marks can be removed later with alcohol). I try to cut the film at least 1" to 2" larger in all directions than the panel I'm covering. While I'm sensitive to being frugal with the seemingly expensive material, it's much easier to have a flap to grasp for stretching the material as much as possible while tacking it to the surface. Save those extra pieces after trimming. They come in handy later.

You'll also need a way to shrink the film to eliminate any small wrinkles that may occur. I use a couple different good, adjustable temperature, heating irons to tack the film down. One is a small iron with a handle and a temperature control on top, like the one made by Top-Flite. The instructions that come with the different films usually have the optimum temp settings for different stages of application. It's important to know what setting your iron needs to achieve those temps, as each iron differs greatly. I use a small surface thermometer to record the correct setting to activate the heat sensitive adhesive on the back of the film. This helps prevent melting the plastic and gives the best adhesion to bond to the wood. Another special iron is a tack or fillet iron. This has a small head with either flat or rounded surface that can get into small spaces. More on its use later.

Other equipment that come in handy for a professional looking covering are a "hot glove" for holding the film while heating and stretching; a trim

tool that holds #11 X-acto blades to trim material a certain distance from the edge for clean overlaps; trim solvent to attach graphics without heat; and a tool called "SmartStripe" by Top-Flite that allows you to cut perfect striping tape any size you want out of Monokote type films. Cutting your striping this way allows you to perfectly match the colors of the covering and it is thinner (and cheaper) than the commercially available automotive striping tape.

Of course you'll need a good supply of paper towels (I like the stronger soft automotive paper shop towels), soft terry cloth towels, and an assortment of solvents like alcohol, acetone, and MEK. Window cleaner like Windex, a plastic polish and even

Pledge cleaner/polish complete the job.

DENT REPAIR

So far I have discussed dent repair and final sanding of the framework. This is very important. The finish of your covering will only be as good as the framework you put it on. I always spend a little extra time sanding out any bumps from misaligned stringers or butt joints, etc. with a long sanding block and fill any dents with the lightweight spackle compound. There may also be some color residue leftover from the adhesive of the previous covering that will need to be removed. There's nothing more frustrating than applying a light colored film to your model only to find the dark stains left on the wood show right through! This residue can be usually be removed by light sanding with 120 grit sandpaper, followed by 400 grit to smooth things out. More stubborn stains can be removed or at least lightened to an acceptable point by rubbing with a paper towel soaked with a solvent like alcohol or acetone. If the previous covering was Monokote, Topflite's Trim Solvent is excellent for removing the stains. Allow the solvent to completely dry before finish sanding. If available, blow off the entire piece with compressed air. Use a clean tack cloth just prior to applying the film.

HINT: *Only wipe the wood in one direction with the tack cloth, preferably with the grain. I've found that wiping back and forth tends to pick up the ends of the grain which shows through the covering as little bumps.*

COVERING ORDER

The first "Rule of Thumb" is bottom to top, back to front. Whuh? When a model is painted, it doesn't have any seams (unless you want the scale panel lines). When a model is covered with film, you end up with a bunch of seams which can be rather unsightly if done wrong. Sunlight can play a cruel trick on your model. Things that go unnoticed in your shop under fluorescent or incandescent light, stick out like a sore thumb when you set it down in the bright sun at the field. There is a way to trick the eye into "missing" those seams by having the overlapped edge of the film facing down. The edge of film coverings will reflect light in the sun and show up as a fairly noticeable line. By having the edge facing down, there is nothing to reflect thereby "blending in".

HINT: *Start by covering the bottom of the parts first, then the sides and finally the top.*

This goes for the wing and stab as well. By covering the bottom first, the top can be wrapped around the edge so the seam is underneath. Another way to make seams less noticeable is to add trim or graphics over or near the seams. It's an old graphic arts way of directing the eye to focus on the things you want and follow a flow to another spot on the piece, away from the more insignificant spots, in this case, the seams.

HINT: *It is also important to cover from the back to the front.*

The most obvious reason is aerodynamic. Should a seam become loose, and if the overlapped seam were facing toward the front of the aircraft, airflow at 60+ miles per hour would quickly tear the covering off. Unless you're covering an electric or sailplane, most model fuels tend to attack the adhesive of the films over time and will tend to delaminate the seams when forced into it at flying speeds. Another reason to wipe down your model after every flight with a good spray cleaner!

I'll use the wing/ailerons covering as my example but the same technique is used for the stab, rudder, flaps, etc.

HINT: *It is important to cover the ends of the ailerons and the inside edges of the wing adjacent to the ailerons first. Use the small sealing iron to apply little scraps of the covering to these areas and trim flush with the edge. If the wingtip is flat or beveled, cover these now as well and trim flush to the top and bottom surface.*

COVERING THE WING

Assuming you are starting with the bottom of the wing, measure one wing half, including ailerons, and add 2" to the chord and 3" to 4" to the span. I prefer to cover each half of the wing at a time with a ¼" overlap in the middle, especially if there is dihedral. Align the leading edge of the film approx. ¼" past the leading edge of the wing so that it wraps around to the top of the wing and tack the film down in a couple places. First, using a "diamond" pattern, tack the inboard edge of the wing in the middle and then stretch the film at the tip and tack. Tack the middle of the leading edge then stretch and tack the trailing edge of the wing. Complete tacking and stretching at each corner then the rest of the perimeter in several spots. **DO NOT ATTATCH THE FILM TO THE AILERONS AT THIS TIME!** Completely seal the inboard edge of the film and seal the leading edge by rolling the

film around to the top.

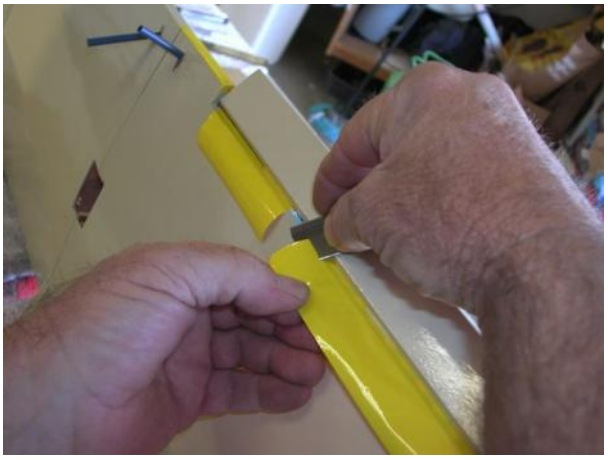
COVERING AROUND HINGES

One of the tasks that worries a lot of modelers about re-covering an ARF (Almost Ready to Fly), or even repairing a plane, is how to cover around those pesky hinges. I have been using a technique that addresses that problem with great success.

Once the surface has been stripped of the old covering, it is important to remove any remnant pieces of covering in and around the hinges. A small pair of hemostats comes in handy for grabbing the little bits of covering that always seem to stick around. It is also possible to use the small sealing iron to press any stragglers back down to the wood. Again, check for any major dents or fractures and repair if necessary

Now that the covering is stretched and tacked down, there should be a flap extending past the aileron hinge line. Make a cut at each corner of the aileron at a slight angle toward the trailing edge. Now, make cuts on either side of each hinge from the center of the hinge line to the trailing edge of the film. Slide a corner of each flap through the gap between the aileron and the wing. Sometimes it's necessary to use a pair of small hemostats to grab the film and coax it through a really tight hinge gap. Once all the flaps have been pulled through, use the small sealing iron to tack the film to the wing while pulling and stretching.

The trick here is to remove as many wrinkles in the film as possible now. On a hot day at the field, your covering is less likely to relax and wrinkle if the film is tight to start with. Flip the wing over and seal the other side of the gap. Trim the excess flush with the surface. Seal the covering down at each hinge then cut off the excess by cutting right on top of the hinge itself. Reseal at each hinge if necessary.



Repeat this process on the rest of the wing before final shrinking the surface.

COVERING THE AILERONS

The ailerons are covered much the same way as the wing. Measure the length (span) of the aileron and add only about ¼" for the film. Measure the width and add at least 1" for the film. Center the film span wise so that approximately 1/8" overhangs each end of the aileron. Align the film with the trailing edge so that the film can be wrapped around at least the actual edge and tack down. Tack the film down on the ends of the aileron while stretching. Using the same technique for the wing, cut slits for each hinge. Insert the flaps through the gap and tack down with the small sealing iron.

HINT: *As you tack the film down, some wrinkles may occur. Simply use the iron to reheat a previously tacked spot so that the film can be repositioned.*

Once you are satisfied with the application, seal around all edges **EXCEPT** for one end of the aileron. We need a place for the air to escape when the finish shrinking is done. Trim the excess film leaving the open end of the aileron alone until finish shrinking is complete. Cut the flaps of covering at each hinge and seal.

Now that the covering is attached, it's time to check the wing and do the finish shrinking.

CHECK THE WING

Trick: Now is the time to do a final check for any wing warp. An incidence meter is indispensable for any modeler. I use mine on every plane, including ARFs. This can be done without the wing attached to the fuselage by setting the wing on a block of foam or a large towel, folded several times, and then weight the top down firmly. However, a good hand level that is about as long as the chord of the wing can be used to do a rough check for incidence. We are only checking for a difference in incidence between each wingtip. If you have a flat bottom wing, do this with the wing inverted. Place the hand level on top of one wingtip so that the end of the hand level is vertically aligned with the trailing edge of the wingtip. Use a small block to prop up the level at the trailing edge. Now look at the bubble on the hand level and mark one end with a felt pen. (If the bubble is not somewhere near the middle of the hand level, adjust the angle of the wing until it is and then mark the bubble.) Transfer the hand level to the opposite wingtip in the same way and block up in the same place. Look at the bubble again. A

straight wing will have the bubble in exactly the same spot. If it is not within a bubble length then you have a warped wing. You may be able to take some, if not all, of the warp out by twisting the wing, opposite to the warp, as you apply heat to the film.

FINAL SHRINK

I almost always use a good heat gun to do my finish shrinking. The iron, even with a "Hotsock" on it, tends to leave fine scratches and dents in the film. Start at the center section of the wing and work towards the tip. I try to heat a large section first to soften the film in all directions and then pinpoint the gun to shrink. It takes a little practice but when you see the film shrink, follow closely with a soft cloth or mitt to make the film adhere and then move on. Shrink the film on the ailerons from the sealed end to the open end. As you reach about 1" from the end, reduce the amount of heat and go ahead and seal the end. Doing this way helps eliminate bubbles that pop up when there is no where for the air to escape.

APPLY THE TRIM

With the aircraft covered, it's time to put on some trim. Almost every kit, even ARF's, come with instructions and usually a picture of the plane is printed somewhere on them. If you're lucky, they'll have a three-view of the plane. I will scan and print a couple copies of the picture so that I can lay out a trim scheme on it. Colored pencils or even Crayons can be used to get an idea of how the colors will look together. Once you're satisfied with the trim scheme, layout the design on the trim covering film. If the design is complicated, like scallops or a freeform design that needs to be mirrored for the opposite side, I'll cut the design on some heavy paper and trace it out on the film.

The secret to getting bubble free trim is to use a solvent to adhere the trim to the covering. There are several products that work well with most covering films like Top-Flite's Trim Solvent for Monokote or another product called No Heat that works well on Ultracote and Econocote. I've even used a commercial cleaner called Cinch that will soften the backing on many films. Another item that is essential is some sort of transfer liquid that allows the trim to be positioned or repositioned exactly where you want it. I've used a spray window cleaner with some success but a product called Rapid-Tack, available at TAP Plastics, has yielded excellent results for me. Originally, Rapid-Tack is designed for applying vinyl decals by softening the adhesive and allowing the air trapped under the decal to be squeezed' out.

HINT: *Make sure the covering is clean and dust free before applying the trim. Also make sure the covering has been heat shrunk and any wrinkles ironed out.*

Generously apply the trim solvent to a clean, lint free cloth or shop towel and wipe the covering in the area where the trim will be applied. Quickly spray the transfer liquid directly over the area you just wiped with solvent and give the adhesive side of the trim a light mist as well. Now lay the trim down on the covering and position. Spray a little more on top of the trim. Use a soft squeegee or even a credit card to work the bubbles out, working from the center out to the edges. Remove the excess liquid with a paper towel as you go. Allow the trim to set undisturbed for at least an hour or more so the transfer liquid can completely evaporate. **Do not use an iron or heat gun as it will cause any moisture under the trim to turn to vapor and create a bubble.** I will let the trim set overnight before handling; just to be sure the adhesive has completely bonded with the covering. Now any striping tape can be applied, if needed.

Trick: *Wipe your masterpiece with Pledge furniture polish for a beautiful shine. Plus, it repels dust!*

By using the techniques I've described above and a little patience, anyone can achieve professional looking results in their covering that they will be proud to show at the field. o

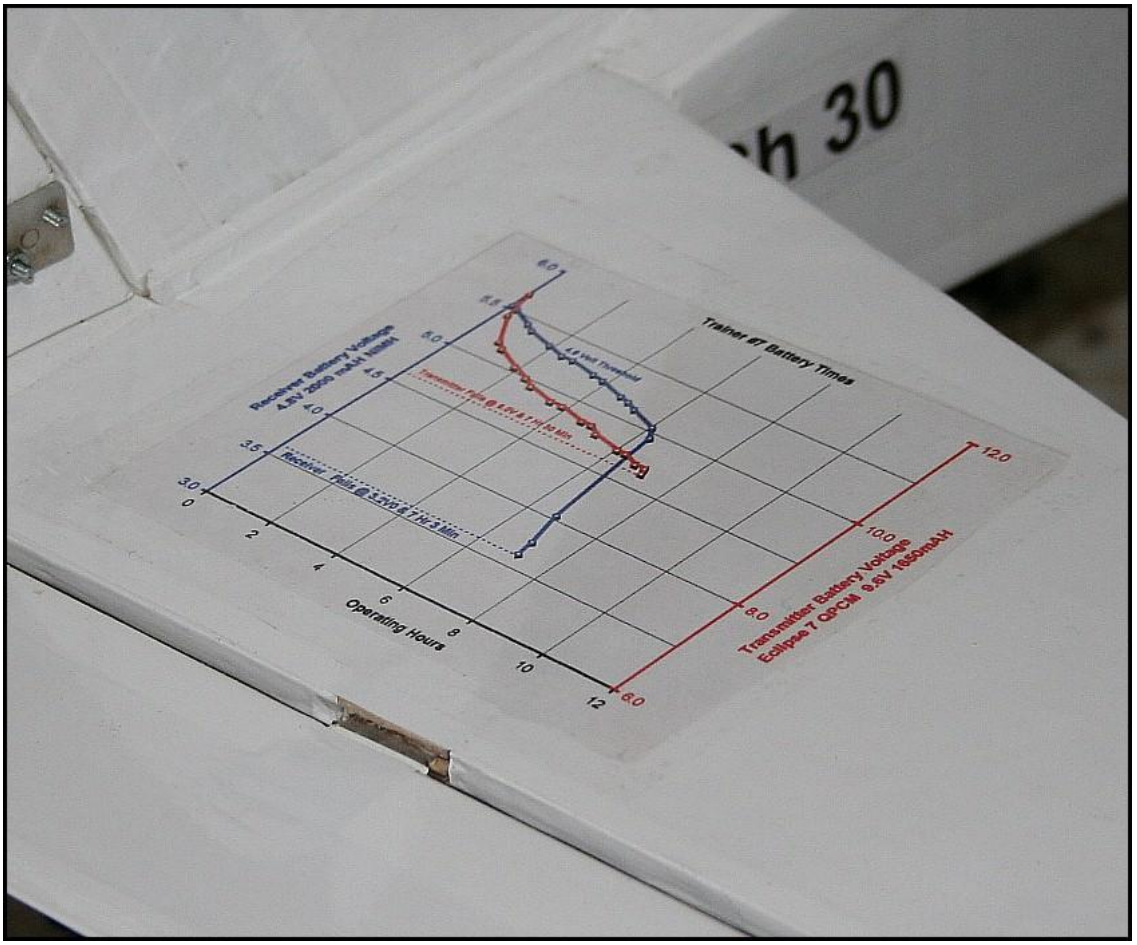
***Training continued from page 8*.**

It is also noteworthy that in this case, the receiver will fail before the transmitter even though the receiver battery is rated at 2000 mAH and the transmitter batter is rated at 1650 mAH. Operation life is a function of not only the Amp-hour rating of the battery but the load and age for the equipment you are trying to support. Note that this chart will change as the plane and its electronics age. Note that the transmitter warning of impending failure came on at 9.2 Volts about 30 minutes after the receiver into a 7 hour 30 minute test.

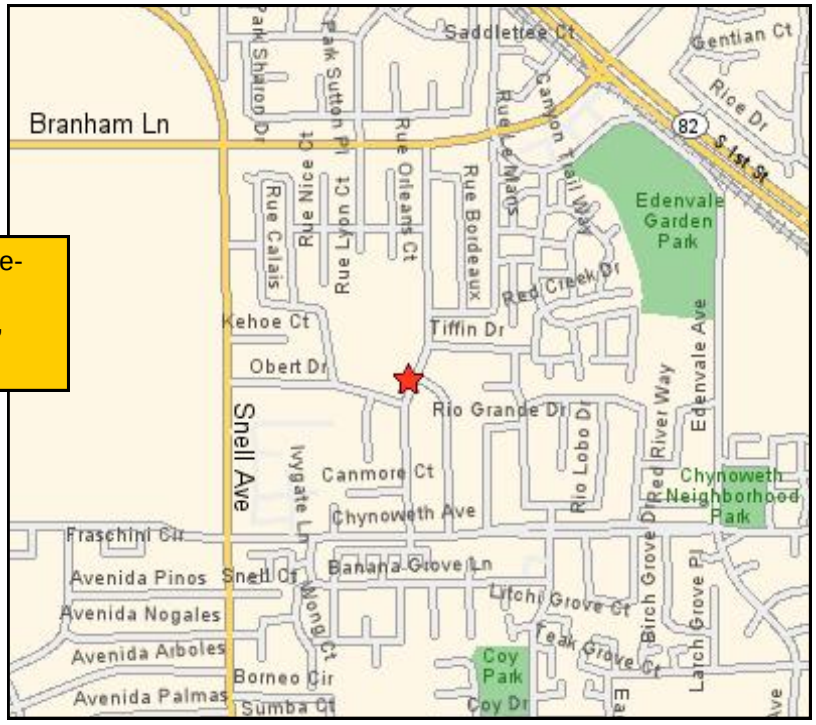
I chose a 2000 mAH battery to get at least 6 hours of flight operation. This would represent a full day's safe flying time. In practice, I would still measure the battery voltage during the day to verify that I have enough life remaining to complete the afternoon's flight schedule.

I also choose to apply a copy of this chart to the tail of the trainer. This assures the club that which ever instructor flies this trainer, he has enough information to know just how much flight time he has left to support his student and flight operations.

It would by my recommendation to have a copy of the battery life be available on each plane that flies. My goal is to reduce the number of crashes I see each week of planes at the field. Perhaps, knowing the amount of battery voltage left will help accomplish this. Happy flying! o



Bill Hempel's 50% Clipped Wing Cub, as shown at the 2008 AMA Convention. Span 168 in., Wt. 63 lbs.



Map to Hayes Elementary School, 5035 Poston Dr., San Jose.

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Reggie Del Aquila, Mike French, Jack Sunzeri

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Bob Zuk's SB-1 Stinson Detroiter, circa 1920s. It was the first biplane in the U.S. with an enclosed cabin which allowed it to be a commercial plane in Alaska. It's 1/5 scale, wingspan 86 in., wt. 20 lbs. with a Saito 220. The kit was manufactured by 3 Saebees. Would you beleive it is an ARF? **PR photo.**

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Next meeting: Thursday, Jan. 31,
7 PM, at Hayes Elementary School.