

M.A.R.C.S. SPARKS

Monthly Newsletter of the Madison Area Radio Control Society
Madison, WI

AMA Charter # 665

Volume 42 - March 2003 - Issue 3

Minutes of MARCS General Membership Meeting, February 6, 2003

By Burr Fontaine

The meeting was called to order by President Wayne Lanphear at 7:10 p.m. with 48 in attendance.

New Members & Guests: Gordon Gotschall is a new member tonight. Gordon has his first plane and is looking forward to flying lessons. David Lorentzen, another new member, started flying a Zagi a year ago and says he s ready now to try his first fuel plane which he brought to Show & Tell tonight. John MacKenzie is visiting for the second time and may become a member soon.

January Minutes: The minutes of the January meeting as printed in the February issue of SPARKS were accepted as published.

Treasurer s Report: Ed McDonald indicated an updated financial report was available for review during the meeting by anyone interested. Also mentioned were the recent AMA guidelines for 2003 include a request for the submission of the by-laws of every club to the AMA and a requirement for an independent financial audit of every club.

Old Business: Tom Lazar reported on the New Year s Day chili fly-in: " fairly decent day, skis were not needed, everyone had a chance to fly, about 40 cars were in the parking lot, and there was no food left over to take home. Thanks Tom for a nice job.

The snowmobile club has put up signs on the field asking people to keep off the field and so far the cooperation has been excellent.

New Business: The subject of flight instruction came up in the meeting immediately after new members were introduced, but it will be reported on in this section of the minutes. Flight coordinator Dan Dudovick tried to match students up with instructors in a timely manner last year, but often the number of waiting students outnumbered the number of available instructors. President Lanphear and others spoke at length about the problem and urged intermediate and experienced members of the club to

Come Fly With Us

MARCS meetings are held on the first Thursday of every month at 7:00 P.M. in Room 201B of the Madison Labor Temple, 1602 S. Park St. in Madison. Visitors are always welcome. We think we have a great hobby and we invite you to come and see and consider joining us.

Officers:

Pres: Wayne Lanphear, bgbird@charter.net

Vice Pres: Don Weigt,

Secty: Burr Fontaine, 233-9063

Treas: Ed McDonald,

Membership information:

Ed McDonald

Phone 249-0734

Flight Instruction Coordinator:

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MARCS Web Site: www.marcswi.org

Web Master: William Velez

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The MARCS web site contains links to War Birds and Electric Flyers Special Interest Group web sites

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Contribution of articles is encouraged. Deadline for submittal is the 20th of the month.

volunteer a little time to help with the new group of beginning flyers this year.

Chris Spierings has volunteered to help new members get their trainer aircraft ready for that first flight. New members are invited to bring in their new trainer for Chris to review and preflight after every monthly general meeting. This is not limited to completed aircraft. Help is also available if you have questions about a partially assembled wing, fuselage, etc.

Ed McDonald has updated and printed the roster booklets for 2003. New books were passed out at the meeting.

Dave Rush and others have completed final plans for the February 15 Awards Banquet at Jingles. Our meeting room will be much more private than it has been in recent years since it is upstairs and away from the bar. The Board members have attempted to contact every Club member to encourage participation.

The March general meeting will be very brief and then be followed by the Annual Swap Meet.

A date change and two additions to the MARCS 2003 Calendar of Events chart that was in the February SPARKS were noted. The date for the Warbirds Over Dane event has been changed to September 20 and two glider events have been added: a 1.5 Meter Hand Launch on August 16 and a Fall Thermal Soar on September 6. A spring work day is yet to be scheduled.

Don Weigt indicated a need for a Contest Director for the Ken Kindschi Scale Rally this year. Chris Spierings and Craig Lovell have done it in recent years and neither of them is available this year.

President Lanphear reported on the committee assignments that were made at the January 16 Board meeting. The MARCS Handbook lists and describes the Club's Standing Committees. These are chaired and staffed by one or more of the Board members as follows:

Finance: Ed McDonald, **Nominating:** Tom Lazar, chm., Chuck Backman, Mark Finley, **Field:** Mike Kimmerly, **Program:** Don Weigt, **Safety:** Mike Pirkl, **Grievance:** David Jeardeau, **Flight Training:** Dan Dudovick, **Public Relations:** Wayne Lanphear & Jerry Buss, **Support:** Bill Kinney, **Events:** Chris Spierings - work with new state event coordinator, **Publications:** Jerry Buss.

Additional Assignments: **Road Pickup:** Bill Disch, **City Coordinator:** Wayne Lanphear, **MARCS 2003 Event Coordinators:** Electric Fly In - Dave Rush, Kindschi Scale Rally - Don Weigt, Warbirds Over Dane - open, Boy Scout Fun Fly - Jerry Buss, Float Fly & Picnic - Charlie Schultz.

Most of these committees will need additional help from the general membership to function effectively. President Lanphear urged all members to consider some service commitment to the club. Please think of where your talents might best fit into the overall picture and volunteer some of your non-flying time to help.

Hal Humphrey has a new vacuum table and has offered the use of it for anyone with their own molds and supplies.

Raffle: Our thanks to Greg Sutter for the donation of a Flitter-B as one of the prizes tonight.

Winners: Miel Vermeulen - Flitter-B; Mike Kimmerly, Andrew Morrow, Ed McDonald, Harley Nelson - T-Shirt; Jeff Alexander - GWS Rx Set.

Show & Tell: Jim Lacy, a new member last month, assembled a beautiful Sig Kadet Senior ARF as his first plane. His comment, "It's huge! Greg Sutter brought a Flitter Ultimate Bipe powered with a Hacker brushless motor and said it was 3D capable. It goes straight up and he wants to see if it will hover outdoors. Dan Sutter had a Lazy Flitter B with floral wrap tissue on the wings and a weight of approximately 12 ounces. David Lorentzen wanted something as tough as a Zagi and came with a combat ready Skull Bandit with a .25 engine and a foam wing covered with rip stop nylon. Andrew Morrow is ready for spring after assembling a Dazzler ARF with a .46 Magnum as his third plane. Show & Tell pictures are on the Club's website, www.marcswi.org.

The meeting was adjourned at approximately 8:25.

Philosophy 101

I'm in favor of driver's education and I'm in favor of sex education -- but not in the same car.

Mark Russell

Are You A Member or A User?

By Chris Spierings

What is MARCS and what does it do? I wonder how many of the members of the club have asked themselves that question. I think if you asked yourself the first thing that would come to mind is it's a group of people who like to fly RC models. Make no mistake that is why it exists but paying \$40 doesn't guarantee that the club or the flying site will exist in the future.

If you spend a little time looking through the membership handbook and bylaws you see it's a bit more involved than just flying the models. If you go a step further and think about the events the club sponsors and some of the things it does in the community you get an even

MARCS 2003 Calendar of Events

Event	Date	Location
MARCS Annual Swap Meet	March 6	Labor Temple (monthly meeting)
New Pilot Orientation and Training	May 3	Kettle Field
Big Bird Rally	June 14	Kettle Field
Electric Fly In	July 5	Kettle Field
Boy Scout Fun Fly	July 12	Kettle Field
Float Fly and Picnic	July 20	Rilie-Deppe Park, Marshall
1.5 Meter Hand Launch	August 16	Long Island Sod Farm
Kindschi Scale Rally	August 17	Kettle Field
Fall Thermal Soar	September 6	Long Island Sod Farm
Warbirds Over Dane	September 20	Kettle Field

better picture of what MARCS is.

What are the rewards of MARCS membership? You get access to a field that is approximately 650' long by 350' wide and you don't have to mow it. You get access to a flying site that meets the AMA's requirements in terms of a layout conducive to safe flight. If you're beginning you get access to the training program. I know we need instructors but if you think it's a bit rough now, it was much worse 10-12 years ago when you waited over a year to get an assigned instructor. New Year's Day you can come out for some pretty good chili and harass those silly enough to fly. In July you can come out and watch more intrepid aviators attempt lift offs with floats attached to their planes and enjoy some more good food to boot. Neither of the two events I just listed cost you a dime beyond your membership in the club.

MARCS, as part of the community, does more than most members might know. Much of it is done by a few individuals. The club is represented by the guys who pick up trash on the road east of the field as part of the adopt-a-highway program. The last couple of years the Boy Scouts have come out and built balsa gliders and flown trainers. We've taken part in programs in schools; we donate magazines to libraries, schools and prisons. We've had the handicapped out and got them flying. I'm just scratching the surface on our community involvement. At one time we had a regional and national role in our Expo and Swap Meet and Sailplane Symposium.

All of these rewards came about because people helped out.

Finally, I'll get to the point of this article. How do you look at the club? For more than a couple folks I think they see it as a fee for service situation. You pay your dues and in compensation you get the training and a place to fly. For those people who see it that way I'd say you are getting one great deal. Read the handbook. When you join and

you pay your money, you become a member, not a customer.

To steal from an advertisement, "membership has rewards." It has just as many responsibilities. The club needs every member to take an active interest and role in the club. Last year we had 190 members. We don't even have 10% of our membership who will help new folks learn to fly. Lately a good turnout for the field work day is slightly less than 25% of the membership. With a very small number of exceptions the same folks who work on the field in the spring are the same ones who help out with events. Interestingly enough if you go out to the field on a weekend or after work you'll see a few of the same faces who do the work but many more you won't even recognize from meetings much less helping out with the club.

We all have lots of demands on our time. Just above is the schedule of this year's events. Field Work Day is still to be decided. How about spending a little time and look at these dates and pencil one or two in on your calendar. Please start taking responsibility for being a member. I personally saw a refreshing number of new faces stepping up to help with offices, events and activities recently. We need more of those folks and a lot less people who think that \$40 is where their responsibility stops.

Swap Meet and Auction

Don't forget that the annual MARCS Swap Meet and Auction will occur at the March meeting. Dig out your hangar queens and the other stuff that's been gathering dust in your workshop and bring it in. Your junk is probably just what someone else had been looking for.

Attention New Members

Don't forget to bring your trainer to the March meeting. A flight instructor will make a preflight check on it. You can then make any necessary modifications before

bringing it to the field and not being able to fly it. If you are building and have questions, you can bring it in too and prevent having to do modifications later on.

Then on May 3, after 9:00 am, come on out to the field, especially if you have not yet been assigned to an instructor. A general pre flight orientation will be held and you will get a chance to fly with one of the several instructors who will be there. This is as special day set aside just for you. Be there.

HELP! Flight Instructors Needed

Please contact Dan Dudovick at 273-4339 ASAP and let him know that you will help this year with flight instruction. We were unable to fulfill our commitment as a club last year to provide instruction for all of our new members and we can't let that happen again this year. The club has the buddy boxes and the students have the trainers, but the new guys need your time.

MARCS can't operate successfully without your helping out in a volunteer role, not only in flight training but in all other aspects as well.

Boy Scout Fun Fly

Twenty two boys have signed up for the Scout event so far and their Scoutmaster says a few more may do so. We will be able to use up to six instructors and six coaches (three teams flying at a time), a few people to assist in building gliders, a couple of cooks to heat up and serve the lunch (Sloppy Joes, baked beans, chips and soda) and a couple more to handle any little details that may arise. Instructors and the coaches are especially needed, so c'mon down. If you can instruct, but don't have a trainer, you can probably use the club's trainer. That's July 12. Call me at 244-8534 to volunteer. Leave a message, if you get my machine. **Andy Morrow** has already volunteered. Thanks.

War Birds Over Dane - Date Change

Owing to conflicts with the dates of other events around the area, the War Birds date has been changed from the September 6 date shown in last month's bulletin to September 20. Please note the change.

It Was a Good Party

If you were there, you know what I mean. If you weren't, you missed a good thing. I mean the MARCS Annual Awards Banquet. The food was good, the facilities were great and the company was excellent. I never saw

hors d'ouvres disappear so fast! Forty nine people attended. A great job by **Dave Rush** and his lovely bride.

Tom Lazar received a **non-traveling trophy** for his years of service in many capacities. He has been a club officer or board member for many years and can be counted on to work on projects and events. He currently serves as an Associate Vice President for AMA District VII. Of course, he annually runs the New Years Day Fun Fly and feeds us chili and hot spiced apple cider. He provides us with coffee and donuts at monthly meetings as well.

Harley Nelson also received a **non-traveling trophy** for his work over the past few years as Field Marshall. If there is a repair job to be done, he just takes care of it. That includes things like repairing the fences, mowing or trimming the grass in the flight line area and generally maintaining the facility. He directs the field work day. He and his son, Scot, have rounded up equipment for use on work day. He put a new access door in the old shed to make it easier to get at the buddy boxes and he does much more maintenance than flying. Chemotherapy treatment a couple of years ago hardly slowed him down in service to the club.

Charlie Schultz has done more for the club over the years than I can recollect, but it includes always being around to help. He runs the picnic and float fly each year. Like Harley, he also provides equipment for field work day. He donated the material for winterizing the shelter for the New Years Day Fun Flies. He has committed himself to donate another several hundred dollars worth of new fencing material for the field this spring. As a hobby shop owner, one might expect him to be active in serving the club, but Charlie has routinely gone far beyond that for years. That's why he received a **lifetime membership in MARCS**.

A **design award** was given to **Harley Nelson** for his use of magazine plans reduced to transparencies and projected on his basement wall to build his big scale crop dusters, as well as for a project this year that produced a flyable End of Season Special. It is made entirely from a broken lawn chair and bits and pieces of broken airplanes taken from the trash barrels. **Frank Baker** received a **design award** for his many original aircraft designs, a lot of which have been published in various RC mags. **Greg Sutter** received an original design award for his work in electric aircraft design.

Mike Kimmerly received the **Most Improved Senior Flyer** award and **Andrew Morrow** received the **Most Improved Junior Flyer Award**.

Service Awards went to **Bill Disch**, board member, maintains lawn mowers, runs Adopt-A-Highway program, **Joyce Jeardeau**, help with event raffles, **Dave Jeardeau**, flight instructor, board member, always available to help, **Pat McDonald**, event support, **William Velez**, building and maintaining MARCS web site, **Bill Rewey**, works in schools to support MARCS, EAA and aviation in general, Young Eagle flights in his Cessna or Pietenpol. Flew the Piet in to Boy Scout Fly In, **Don Weigt**, directed scale rally, board member, flight instructor, writes articles for SPARKS, **Dan Dudovic**, Flight Training Coordinator, flight instructor, board member, **Larry Landucci**, represents sailplane interests, board member, **Bob Miracle**, board member, work projects, **Tom Ernser**, mails SPARKS, work projects, **Craig Lovell**, CD for Scale Rally and War Birds Over Dane, leader of war bird group, **Chuck Backman**, consistently volunteers to work at events, board of directors, **Lois Weber**, event support, **Charlie Weber**, ran event raffle, **Dick Sutton** meeting raffle, **Chris Spierings**, War Birds Over Dane event director, board member, general volunteer when needed, **John Thompson**, organized two fun flies, **Dave Rush**, organized banquet, organized electric fun fly.

Where the **Smoking Hole Trophy** is concerned, Bill Disch and Wayne Lanphear made **Frank Baker** struggle to win. But Frank rolled his B-17 inverted on take off to plow so deeply into the ground that a shovel was needed to get it out, along with a bucket of dirt to fill the hole in the runway. Then he did the same thing with his new A-20. When you have several planes on the same transmitter, he says it's wise to check your aileron direction before take off.

Bill Disch won the **Submarine Commander Trophy**. He landed smack in the junction of the north-south and the east-west drainage ditches with great precision. Being a hot day, he took a swim to get his Hog Bipe out. Heck of a splash! Drowned his cell phone too.

Tom Lazar was practicing formation flying with his PT-19 with Carl Bachhuber's A-17 and Wayne Kuenze's PT-19 at the Scale Rally. It's tough to tend to position in formation and watch for trees too. Thus the **Tree Chopper Trophy** went to Tom. Ed McDonald competed hard for this award as well. I hear he needed an ax to get his plane back, but Tom had a much larger audience.

To this point the awards ceremony went quite well, but then the Board of Directors ruined their credibility, probably for years to come, by giving the nice guy award, the **Scouter Trophy** to me! I can't help being awfully pleased at apparently being thought of as being in the same company as the past six winners. Thanks guys.

Harley Nelson gave every member a pair of his blown glass, water filled birds of paradise. Absolutely beautiful, Harley! Thanks.

What do **Whiskey and Soda** have to do with aviation? Chuck Backman was falsely accused of saying it's what he drinks with his flight attendants on the flight deck. I don't think so! **Chris Spierings** won the contest by identifying them as the lion cub mascots of the Lafayette Escadrille.

Dustin Buescher showed a movie of his UW-Platteville team's SAE sponsored international weight lifting competition. If memory serves, they finished second, lifting 24 plus pounds on a 6 pound plane. Well done, Dustin.

It was a great party!

Who Are the Event Helpers?

Each year when it comes time to decide who should get the recognition awards for helping at events and for other reasons that these awards are given it turns into head scratching time. *Hmmm! Who was that who ran the impound, who helped serve the food, who did this or that?* Simply put, we need to do a better job of saying "Thanks."

This year, let's fix that. If you run an event, as soon as it's over, send me a note on who your crew was. Better still, you can write a short article about the event for the next issue of SPARKS, naming the helpers. If you like, I'll write the article, but give me the names of your helpers in any case. We can then thank the people at the time and have a trail of bread crumbs to know who should be recognized at the banquet. Remembering who to say "Thank You" to is a good way to start getting help next time.

I just hope we haven't missed anyone in the foregoing report on the banquet. If we did, I'm sorry - - and thanks a big bunch for helping!

Whizzer's War Bird Report

By Mike Pirkl

In the last couple of columns we discussed the tools needed and what is required to build a plane from scratch or a kit. These days there are a number of ARF (Almost Ready to Fly) military planes out there. I am going to review one of them because I found it a great entry-level warbird and if you want a good platform for introduction into gas powered aircraft.

Horizon Hobby sells the PT-19; a primary trainer aircraft used by the USAAF during WWII to train their young pilots. The PT was the primary trainer, the first that the guys learned to fly; from there they would advance to

the AT-6, the advanced trainer. Funny how those initials do stand for something.

The PT-19 is a 100-percent balsa-and-plywood model complete with built-up rib/spar wings and a slab-side fuselage with stringers for enhanced scale appearance. The wings, solid-sheet tail feathers and fuselage come covered in yellow and blue Ultracote; the rudder comes trimmed in red and white Ultracote. The fiberglass cowl comes painted and is well matched to the Ultracote dark blue. The instruction booklet is 56 pages long and has 176 photos and diagrams covering all assembly stages, which are supported by clear instructions. The booklet is divided into 18 sections for each phase of assembly. There's even a section that includes full-scale, 2-view line drawings in case you want to go all-out on detailing.

The hardware kit includes virtually everything you'll need, from the rudder pull/pull linkage to the different components needed for either ignition or glow-engine installation. Two fuel-tank stoppers are even included—one for glow and the other for gasoline (only glow-fuel tubing is included).

This model has a long tail moment, and that's a good thing for stability and smooth pitch response, but it also means long control linkages and more potential for slop. I decided to place the elevator servos and rudder servo in the back of the fuse for nice, short, positive control-rod runs. With the slab-side fuselage, this modification was quite simple. It also helps when it comes time for balancing the plane with the heavier G-23 in the front.

Some gear problems were discussed on the web and with club members themselves about this plane so with the help of Craig Lovell he opened up the wing on my model and inspected to the best of his ability how the block was attached to the wing, finding that it was epoxied in fairly good he CA'd the soft wood in the area and closed it up again. I have found out on my last incident with the plane that one of the gear legs had loosened up in its hard wood mount. Upon opening everything up I found that the ribs themselves had actually broken off from the leading edge and the central spar. The hardwood mount was still attached firmly to the ribs themselves. The Robart struts I have on my PT could be causing additional strain to the mount because of their added weight. I'll have to see if any more of the same problems arise in the future.

Another good idea from Don Weigt is to reinforce the 1/4 inch firewall with a sheet of 1/8 inch plywood epoxied onto the front (unless new ones are thicker), and anchor the whole thing into the nose with about (8) 3/16 inch diameter dowels epoxied into holes drilled at an angle

through the firewall, 2 into each of the four sides of the plywood box it is mounted on to.

This model is big, and so are its parts. In my estimation, this makes it easier to build than a small model, especially if you have big hands and sausages for fingers like mine. Large parts with an overall good fit make assembly a very pleasant experience.

The question of power for this design is a really good one. A model that is fairly strong, weighs in at 12.53 pounds and has 1,009 square inches of wing area enables you to have a lot of power options. Is the model strong enough to handle the power? Definitely. Is it needed? Definitely not. Any 4-stroke 1.20 of average power will do perfectly. I wanted to get into gas models and engines and I figured this was an excellent chance to do just that.

As far as how the PT flies I'll let Chuck Backman and Don Weigt elaborate; they both have substantial stick time with the PT-19.

The airplane flies good out of the box as they say with two exceptions. The first problem is that if the airplane is properly balanced for flight, it is very prone to nosing over on taxi, takeoff, and landing. Bending the supplied struts forward about 1/2 inch can solve this problem; it will still tip on its nose on occasion but it is more controllable. On takeoff throttle should be applied smoothly with full up elevator applied at first and relaxed to neutral near liftoff speed (I suspect the real airplane was flown the same way). Landing is the exact reverse and when at taxi speed, the elevator should be up. The other flying characteristic that we have all observed is the pronounced nose down pitch when full rudder is applied. I'm not sure why this is but the vertical stab is quite tall with a large rudder surface above the thrust line. Whatever the reason, the aircraft will yaw and pitch down with large rudder inputs. It's really not a problem, but the old law of using rudder as the primary control for turning at low speed has to be used with some discretion (i.e. back stick but this may give you a tighter spiral and more problems). All in all it's a very forgiving airplane and I have to admit one of the most pleasurable airplanes I have owned. It has fairly slow roll characteristics but adequate and does every maneuver in my limited bag of tricks. Don also recommend that the elevator throw be increased to 1" up as opposed to the 5/8" that is recommended.

Well there you have it. An ARF warbird for you if don't have the time to spend doing a full from scratch build plane.

The Bent Bird

Center of Gravity and Stability

By Don Weigt

Lots of things have to be right for our planes to fly safely and well. It's important that the plane is strong enough and built true, that the engine runs reliably, the radio control system works properly, the control surfaces move the right directions, and so on.

One of the most important requirements is more subtle than most of those. It is shown by a funny little circle with two of 4 quarters dark and the other 2 light: it's the symbol for the center of gravity, or CG. Sometimes there's no CG symbol, just arrows pointing up under the wings or a note that the CG should be within a small range of distances behind the leading edge.

Having the CG beyond that range could make the plane uncontrollable: a guaranteed crash! So, get it right. If your latest plane, new or rebuilt, doesn't balance where it should, fix it before you try to fly it.

The CG has a big effect on pitch stability. The wing is set at a higher angle of attack than the horizontal tail on nearly every conventional design. That is: the leading edge of the wing is higher than the trailing edge by a few degrees when the horizontal tail (stabilizer and elevators) are level. The canard (front mounted stabilizer and elevators) is set at a higher angle of attack than the wing on canards (tail first designs). The angular difference between the wing and horizontal tail is called decalage. Note that this changes with elevator deflection, which is what we control when we change elevator trim.

As a result of the decalage plus the way the wing and horizontal tail generate lift, the center of lift moves toward the back as the plane slows and the angle of attack must increase to support the plane. It moves forward as speed increases and the angle of attack must be reduced to keep the lift equal to the plane's weight, and not climb.

At each CG position and trim setting (decalage), there is one angle of attack and airspeed where the center of lift is at the same place fore and aft as the CG, and the plane returns to that speed and angle of attack whenever it isn't disturbed by turbulence or control inputs. When the plane goes faster, it automatically pitches up to slow down. When it goes slower, it also automatically pitches down to speed up. It regulates itself. Just set the power to maintain altitude, and it practically flies itself.

When the CG is right, that speed is one where the plane flies well. If the CG is too far back, that speed can be below the stall speed. If we add down elevator trim in an attempt to make it fly faster, we reduce the decalage, and the plane pitches less for speed changes. When tail

heavy, the decalage angle may actually become reversed: the horizontal tail on a conventional plane may be flying at a higher angle of attack than the wing.

When that point is reached, the speed becomes unstable. When the plane slows down, it tends to slow down more. When it speeds up, it tends to speed up even more. It happens very quickly, in a fraction of a second. You can imagine what it's like to try to fly such a plane. It needs constant large elevator inputs to return the plane to level flight, and usually pitches off in the other direction as soon as you get it there. Nasty! Good luck trying to land a plane like this!

Nose heavy might seem OK. It certainly is better than being tail heavy. The pitch stability is increased to a high amount. You can fly this way. The problem is that the wing has to work harder, as the tail lifts less or pushes down more to shift the center of lift forward to the CG. There may be too little elevator authority left to slow the plane to a good landing speed. At some forward CG position, you may not be able to rotate to take off, and the plane will nose over very easily if a tail dragger.

So, if you're building your own design, it's better to start out a little nose heavy, and maybe have to land a little fast, than to be tail heavy and find yourself flying an unstable airplane.

If your plane is already flying, why would you shift the CG? If it's a trainer, and isn't regulating its speed well, shift it forward a bit and add a little up elevator trim. If it's a hot plane, and pitches up too much as you add power, move the CG back a little bit at a time until the trim changes less.

When moving the CG back, be very alert for signs the plane is becoming unstable. If it stays nose high as you land it and the speed slows, you are nearing the neutral stability point. You may just pitch up too high and stall with little warning, because the plane won't try to recover as the speed drops.

If you find you can't flare anymore because it's too slow, and it isn't pitching the nose down to pick up speed, it's time to move the CG back forward a bit, unless you really want it to fly that way. It might be good for some aerobatics, but it takes more skill to fly it, and the risk of crashing is higher.

It's also important the CG be near the center line of the plane: that one side isn't a lot heavier than the other. This can cause problems with aileron trim that varies with airspeed, and switches when the plane is inverted. In extreme cases, one wing will stall long before the other, and the plane will be very hard to land safely.

Most models are close enough to balanced side to

side, but if you have a side mounted engine, the plane may fly better with a weight in the opposite wing tip that balances it on the centerline. It doesn't take much weight, since it's so far from the centerline.

Other considerations are that you don't use all heavy wood in one wing panel and all light wood in the other, or have one panel much heavier for some other reason. That's something to be careful about when repairing plane. If you rebuild one panel, you may need to add a small weight in the other tip to keep the wing balanced.

You can check the crosswise CG by lifting the assembled plane by the prop and vertical tail. If it dips one wing tip a lot, that side is much heavier, and you may want to add weight to the lighter tip.

The Bishop Controversy

By Jerry Buss

Last month we looked at the story of Billy Bishop, Canada's leading ace in WW I, and found that a recent book challenges the accuracy of his widely accepted score of 72 kills. The book in question is *The Making of Billy Bishop*, by Brereton Greenhous, published by The Dandurn Group, Toronto, Ontario. This month and next I intend to review some of that book's allegations for you. The author, born in 1929, is retired from the Directorate of History, Department of National Defence and has written about Bishop previously for *The Canadian Historical Review* and *The Canadian Encyclopedia*. He is a co-author of the history of the RCAF in WW II and is described as a "professional historian."

By the way, if you decide to read this book for yourself, be prepared to be disillusioned about some of your RFC heroes. For instance, every reference to Mick Mannock that I ever read credits him with 73 kills (see mention of him in last month's article). Greenhous points out that the citation for his Victoria Cross credits him with 50. The award was posthumous and Greenhous attributes the inflation to Mannock's "acolyte," Ira Jones, in post war writing.

First, we must understand how scores were categorized and confirmed by the Royal Flying Corps and its successor, the Royal Air Force, which came into being on April 1, 1918 by amalgamating the Royal Naval Air Service and the RFC. After a sortie a pilot would write a very brief, terse report on his flight, stating the result of any encounter with the enemy. He might say there was no result, he only damaged his opponent, he went down in flames, he saw him crash, he was DDOOC (driven down out of control) or he was FTL (forced to land). If witnessed by a fellow pilot he

would so state. Such a report would be given to this squadron commander, who would affirm or deny it as a kill. If not otherwise witnessed, the CO could consult daily reports by artillery observers for possible confirmation. In theory, a witness was required, but that quickly became sheer fancy. It was a matter of the CO's desecration and Billy's CO seems to have used quite a lot of it. But then so did others.

A DDOOC was often an intentionally induced spin or other apparent loss of control, a ruse by the enemy pilot to escape. Once below a cloud layer or when close to the ground, he might recover and escape. An FTL usually involved minimal damage. Most were retrieved and returned to service, if on their own side of the front. The vast majority of the fighting was on the German side. Albert Ball, the RFC's first really great ace was credited with 44 kills. Of these 29 were "destroyed," 6 were DDOOC and 9 were FTL. Draw your own conclusion about his real score.

A claim to actually seeing a foe crash was not often made. When the victim's buddies might be behind a nearby cloud or in the sun, one could not afford to lollygag about watching the victim fall two or three miles in perhaps 5 to 7 minutes or more and expect to live to submit a claim. One could seldom follow him down because altitude advantage was vital to survival. A burning victim was probably a kill, considering that his machine was made of seasoned spruce and highly flammable doped fabric. Some DDOOC's were real kills, some were not, but how does one distinguish them if not witnessed to have crashed? It seems hard to give much credence to an FTL, but they were nonetheless counted, as Ball's record demonstrates.

At the outset of real air to air combat, the Germans and French gave publicity to their high scorers, such as Immelmann and Guynemer, but that never was the British way of going off to battle. It was a matter of keeping a stiff upper lip and jolly well going out and doing one's duty. To be publicized as a hero one had to be a general or admiral or the winner of a Victoria Cross. Lanoe Hawker had a VC and was popularized with his 7 kills, but then von Richtofen killed him. Better not to make heroes. If a pilot were lucky, he might be MiDed (Mentioned In Dispatches), but usually one had to die heroically to achieve that. Finally, Major General Hugh "Boom" Trenchard, the RFC commandant, came to see the need to improve the morale of the men he was sending out to die in grotesque numbers and to little purpose. Then there was the home front propaganda value of heroes in diverting attention from the grievous losses among sons and husbands in all branches. French, and even German, dispatches lionizing

their air heroes were appearing regularly in London papers. Belatedly, Trenchard put out a call to his commanders for heroes. It was catch up time and Albert Ball, as unquestionably brave and skillful as he was, was the first major beneficiary and he was publicized accordingly.

No. 60 Squadron's CO, Major Evelyn Graves, was killed on March 8, 1917, the day prior to Billy Bishop's arrival and Major A.J.L. "Jack" Scott arrived to replace him on the tenth. Injured in crashes, both Graves and Scott walked with crutches and had to be lifted bodily into and out of the cockpits of their Nieuports, but still they flew effectively in combat. Whatever else Scott may have been, he did not lack for courage. He was a man of high social standing, a barrister, a master of fox hounds and closely acquainted with such worthies as members of the peerage, sons of former prime ministers and a future one, Winston Churchill. He was also a member of the social circle surrounding Lady St. Helier, Billy's influential benefactress with whom he stayed when in London.

No. 60 was no rest camp. Graves had been one of six pilots, a third of its authorized strength of 18, killed in two weeks. From the last week in March, when Billy achieved his first kill, through May 1917, No. 60 was a revolving door for green replacement pilots with 35 killed or sent home with wounds or other injuries. Small wonder the RFC needed some heroes to build morale!

While Greenhous ridicules Bishop's score and the airdrome incident, he still expresses great respect for his courage. Weather permitting, he often flew two patrols per day with his flight, of which he was appointed leader in only a couple of weeks, and then one or two and sometimes three sorties per day alone - invariably over German territory where the Albatros D-III could outrun his Nieuport 17 by 4 or 5 miles per hour and out climb it too.

The first two of Billy's kills in March 1917 were D-II's, witnessed and solid. Starting in April, however, things began to get dubious, according to Greenhous. On April 6 Scott denied confirmation on a D-III, but the following day he confirmed a kill when Billy reported a D-III as DDOOC and a balloon that Billy said he had left smoking (the RFC didn't count balloons as "kills"). Billy had not actually claimed destruction of either. During the rest of the month, Scott made a habit of embellishing Billy's reports and soon they began reflecting what Scott was subtly teaching him: he could get away with exaggeration. Soon a pattern began to appear where most of Billy's combats and nearly all of his kills occurred while flying alone, as opposed to while on patrol with potential witnesses. Always, Scott's reports to his wing commander puffed Billy's action reports, often greatly.

On April 30, according to Greenhous, Billy's combat report told of a fight without result in company with Major Scott against four Albatroses. Neither his report nor Scott's mentions color. In his book, *Winged Warfare*, Bishop says the planes were scarlet and led by von Richtofen, himself, on whom he fired twice. As it happens, on the 29th, Greenhous says the Red Baron had scored his 50th kill (actually it was 49th through 52nd) and was immediately ordered by the Kaiser not to fly before he could be personally congratulated by him. Richtofen's diary shows he spent the 30th entertaining his father, who had arrived the day before to visit. Brother Lothar did fly on the 30th and scored his 15th and 16th kills, but his account of the fight doesn't match Billy's.

Billy was engaged to Margaret Burden, granddaughter of Timothy Eaton, millionaire founder of Canada's largest chain of department stores. Many of Billy's letters to Margaret are cited in the book. They often embroider the events he recites in his combat reports. Critics of Greenhous reply questioning what young man has not embellished the facts of his prowess when trying to impress the object of his desire. Of course, he was also trying impress her parents of his suitability as a son-in-law.

On May 2, Billy reported having attacked three Albatros C-III two seaters while flying alone and shooting down two of them. Again, there were no witnesses. Writing to Margaret on May 29, he reported having been authorized the Distinguished Service Order for that fight and says he learned that he had been nominated for the Victoria Cross by Scott, but apparently it was downgraded at some higher level of command.

To be concluded next month.