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 MEMBERSHIP CHAIRMAN: *Norm Skinner*; NEWSLETTER EDITOR: *John Burdin* 667-1785; Field Phone 425-9634 *June 1999*

JUNE BIRTHDAYS

- Michael Zellers 2nd
- Alice May 3rd
- Norm Skinner 8th
- Harry Becker 9th
- Richard Kachardurian 11th
- Ian Clark 16th
- Matt White 23rd

A VERY HAPPY BIRTHDAY TO ALL!!

THE NEXT MEETING IS:

June 3rd

July 1st, August 5th, September 2nd,

The deadline for contributions to the next newsletter will be:

June 16th.

we intended. We're looking at holding another event sometime this summer.

Please make every effort to attend the June meeting so that these issues can be resolved.

WING TIPS

By: *Ed Moorman, KD4QBM*

Wing tip shape has a large input to air plane drag. They also have a big influence on roll rate. Since I have mentioned roll rate, I'm going to relate a story about how I learned this from experience. This occurred in the 1975-1976 time frame. I had an original design plane with a low aspect ratio (3.5:1), a 48 inch span, low wing. It originally had the sort of swept back, "Fokker style" wing tips you normally see on Stick type planes. The plane was very maneuverable, had a fairly fast roll rate and I snapped and spun it regularly. One Saturday I got a notion to try something a little different-end plates. That evening I took the wing and ran it through a band saw, cutting off the tips and reducing the span to around 42 inches. I then made some end plates from some light paneling

The President's Korner

By: *Jim Nunnallee*

My apologies for missing the May meeting. I've had a bit of a medical problem that has been plaguing me for several months but I'm now completely recovered and back in full form.

The Executive Committee will have several recommendations for the club to vote on at the June meeting. Issues will include the Jim Smith memorial, incorporating helicopter operations at the field and the financial picture for the remainder of the year.

The spring airshow was a great success but due to being rained out on Saturday, we didn't make as much as

We are now meeting at the Mulberry Police Station / City Hall. Located at the intersection of Hwy 60 & 37. The new time is 7:00PM

Come to the meeting and learn more about your flying club. Meet and make new friends, learn well kept secrets from model pilots with years of experience and make a difference. Bring a friend or relative. You never know who may want to become involved with our model club.

(Continued from page 1)

plywood by tracing the tip rib and adding a half inch all around. Sunday morning I was out for a test. On climb out I tried a roll. It was so fast I was shocked. It must have been double the previous roll rate. OK, I shortened the wings some, but removing 3 inch Stick style tips shouldn't make that much difference. Next, I tried snaps and spins. No luck. The plane would spiral dive and barrel roll, but wouldn't stall enough for those maneuvers. I had actually lost wing area, but now could not stall! Landing was slower than normal. Wing tips do make a difference. Some years later a friend of mine, Bob Bruce, after watching my success with end plates, ran an experiment which I was able to witness. He made a rudimentary wind tunnel and tested several wing tips. He used a short wing section with replaceable wing tips. For visibility, the wing was Monokoted yellow. To be able to visualize the flow around the tips, he glued bright red thread every inch or so along the leading edge of the wing. Several different designs of wing tips were used for the test. We didn't actually take measurements, but watched the flow as shown by the threads. As the angle of attack increased, you would see more flow outward and around the tip. At the same angle, different tips on the test wing would exhibit different amounts of outward flow. Increased outward flow should indicate a greater tip vortex and greater induced drag. The wing tips with the least outward flow should be the most

efficient. The results we obtained correlated with my subjective results of test flying several different planes with different types of wing tips. Let's look at several different wing tips and how they perform. Balsa Block wing tips. A plain old one inch block is a pretty good wing tip. I saw some outward flow in the tunnel, but not much, indicating reasonable good efficiency. Planes I have flown with block wing tips have had good roll rate. They are also easy to make. Flat Squared Off Tips. Just a piece of thin plywood or quarter inch balsa on the end of the wing works pretty well. In the tunnel, it looked slightly better than the block tip. For this reason, I basically quit bothering with wing tips on my original designs. Just about anything you put out there makes it worse, so why bother. Swept Back or Fokker type tips. These aren't very good. Next to worst in the tunnel of the ones we tested. They do look sort of WW I style, but I don't think anyone knew much about aerodynamics at the time of those designs. Your best bet for a Stick is to leave these tips off, replacing them with sheet balsa or end plates. Rounded, 30's style tips. These were the worst. They showed the most outward flow. Planes I have had with curved wing tips were notorious for rolling slowly. If they are scale OK, but remember, they will add to drag and slow your roll rate. They are also the hardest to construct. End Plates. The best. There was no outward

flow shown by the threads. Certainly, out past the thickness of the plate, there is outward flow, but close to the wing, no, it is fenced off. Bob was convinced. He won't build a plane now without putting end plates on it. Another flier in the club noticed our testing and did his own. He built a plane with flat tips and end plates he could screw on. He was also convinced, claiming a 5 mph difference in landing speed. Hoerner tips. These were originally designed by an

Courtesy and common sense makes R/C modeling fun for everyone.

engineer named Hoerner and are the curved down tips you occasionally see. The A-10 Wart Hog attack plane has Hoerner tips, as do some Cessnas. They are effectively the lower half of an end plate. I have made them fancy and I have glued on an end plate lower portion and haven't been able to tell the difference. Since they are only on the bottom, they only work when you are upright. They give you nothing when you are inverted. Only a few full scale planes fly inverted and do outside maneuvers like RC models. For this reason, end plates are a better choice for us. Winglets. This wing tip may be great for air liners, but they have two strikes against them in RC. First, they aren't very good inverted and second, they are easy to break off. Winglets are in more danger from hangar rash or being bumped at the field than any other wing tip. Some RC sailplane designers have tried them, but I haven't

(Continued from page 2)

seen them myself. As an addendum, I'd like to add a couple of things you can do with wing

tips with regard to rigging your plane. If your plane rolls in knife edge, a wing tip change might help. High and shoulder wing planes, like a Stick, normally roll in the direction of the applied rudder. When you do knife edge with a Stick, for example, the plane will try to roll out and you have to hold aileron against the roll to maintain your attitude. A way to correct for some of the dihedral and the high wing location is to add Hoerner tips, or the downward half of an end plate. These projections down from the wing tip actually have the effect of anhedral, canceling out some of the dihedral the plane has. On the other hand, if your plane has too little dihedral, a wing tip can add dihedral effect for you. An example of this would be a low wing plane built without dihedral or sweep. This plane will tend to roll OPPOSITE to the applied rudder! Adding a block wing tip which has been beveled upward at 45 degrees will have the effect of increasing the dihedral. You see these tips at the field all the time-many trainers have them. They are not for looks, they add effective dihedral. I will be writing another column in the future on these and other dihedral effects. Look for it.

*Ed Moorman, AMA 553, IMAA 2540,
(moorman@tsufl.edu)*

Regular Meeting Minutes

May 6, 1999

(By: Keith Hunt, Secretary)

Meeting was called to order at 7:10. Don Wasilewski, Treasurer, present. President, Vice President and Secretary not present. John Burdin presiding in their absence.

Attendance: 20 members, which included 2 new members.

Total Membership: 80

Guest: None

New Members: Shannon Smith and Don Buterra. Don is a new student with the club. Welcome!

Instructor's Report: None

Field Maintenance: Ed Deeson again this month reminded everyone because of the dry conditions, no burning and take trash home. Ed also has placed another coat of paint on the orange fence.

Safety Officers Report: None

Old Business: None

New Business: Dee Miller at the beginning of the meeting tried to pass a motion that no meeting take place since no officers were present. Dee agreed to table his motion at the request of John Burdin.

The AirShow on April 16-18 was a great success. Everyone agreed that it went very well de-

spite the rain on Saturday. The funds made for the one day

(Sunday) were great. Plans are already underway for next years AirShow. Look for other events to be coming up in the future.

Discussions about how to increase the clubs "activity level" was brought up by Norm Skinner. Some ideas brought up were to have a repair/fix-it-up day. This would be done either at the field on a Saturday or the question was asked if Jim's hobbies would be open one night a month for people who have repairs or want to discuss was to properly fix repairs can meet and have other members help? More activities during the year increase activity level for club.

The post card mail outs will be tried one more month to increase the members at the meetings each month.

Discussion was made on the 50% fee for members joining after June 1st. Club fees were mentioned and the possible need to raise these fees was brought up by Dee Miller. Non members flying at the field seems to be a policing problem. Discussed ways to stop free loaders?

It was mentioned that at the executive meeting helicopter pilots would be getting a hovering pad.

Plane of the Month: George Mello brought his Schitz 40 yellow/red which was modified after the pusher B1RD. Shelly Smith brought his helicopter. Shelly also noted that he is an instructor for helicopter pilots.

Meeting adjourned at 8:05

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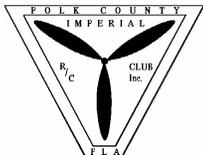
• COMING AREA EVENTS

- IRCC / IMAC October 9th & 10th
- FLORIDA INTERNATIONAL
JET RALLY October 22 - 24, 1999
- IRCC/IMAA WINTER RALLY December 4 - 5, 1999

• HANGAR SALE

- Charlie Patterson has Club patches for sale \$ 1.00 each . He also has hats. See him at the field or call him at 859-3090.
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Meeting Place P-1

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