National Control Line Racing Association

Volume 4, Issue #3 **June/August 1997**

What's Inside

Nats Entries Up 16%

Presidents Corner

Greetings, as our contest calendar gets into full swing, please send in your contest results for inclusion into the Newsletter. Also if possible include the type of equipment used, plane type etc. Many of our readers have asked for this information. Don't forget we also now have the ability to put pictures into our newsletter as well!

In our last issue I reminded everyone that personal ads for swap shop items are free for all members to include in the Newsletter. Send them in if you have something to sell or are looking for some equipment. It's a great way to share information and find out who has what available.

The 1997 Nats are now history, entries were up across the board. We would like to Thank Roy Gould for an excellent job as ED, and to all the Volunteers who worked many long hours to make the 1997 Nationals a success.

Good Flying
Larry Dziak

Mouse Racing Part 2 & 3

Paul Gibeault

Chassis and Race Equipment:
a) Airplane: currently, there is no better design to start with than the record holding "Streaker MK V". 'Nuff said.
b) Prop: Must have 4 inches of pitch to get rolling! Any 1/2A prop made by Cox, Top Flight and Tornado is OK. However, cut-down props (less than 5" diameter) go faster than stock. Only test flying will tell what prop(s) ultimately work best for a given combination. A Tornado black 5x4 cut to 4 3/4 diameter has won the Nats final, so why not start there?
c) Fuel: A minimum of 40% nitro really is required to get with the program. 60% nitro or more yields faster times only if everything is correct, and you have fabulous reliability on 40% fuel, and you are practiced, and know what you are doing! (be willing to buy lots of expensive glow plugs, too!) A most important note about Mouse fuel: a MINIMUM of 5% and preferably 10% of the fuel must be castor oil. Should you decide to race your Cox .049 on castor oil deficient fuel, your engine will commence a course of self destruction and you will find out first hand why people have sworn off flying Mouse Race for good! You have been warned. I have developed a truly good fuel mix for class I Mouse for those of you able to blend your own fuel, as I do.

5% Klotz bean oil (or castor oil)
15% Klotz KL 200 (or K&B X2C)
40% Methanol
40% Nitromethane

= 100% Great Cox .049 Mouse Race Fuel

Pre-Start & Race Warm-Up
1) Before the first run, always prime the crankshaft with oil or raw fuel for additional lubrication at this critical time.
2) Fill tank, prime exhaust, and wind up spring starter 1-1/4 turns to start. Reason: Anything less will allow your engine to start backwards. 1-1/4 turns ensures a correct start 1st time and every time.
3) I doubt a Cox .049 takes a really good setting until its warmed up somewhat. Therefore, don't be overly

surprised if the ground and in air settings differ. The best time to fine tune the needle valve is immediately after a flight. Important note: If your race NV setting changes by more than 1/2 turn, you have a fault! Clean or flush out the dirt, or fix the leaky tank, or loose glow plug, but stop perpetually messing with the needle valve.

4) To stop a running engine on the ground, squeeze your thumb and index finger over the tank vents. This verifies your tank seal integrity. If the engine doesn't stop and continues running, you have a sizable leak somewhere that must be fixed!

5) I have mentioned earlier that Cox crankshafts have a fatigue problem. You can accelerate all kinds of shaft and case problems by stopping a running engine by its prop nut. DO NOT DO THIS! Stop the engine per step 4 and you will considerably increase the life of these parts, and save yourself some grief.

6) Always monitor the color of the engine exhaust oil. Usually a good running engine will alert you in advance of an impending failure by "making metal". This means tiny aluminum particles are being rubbed off and are visible in the exhaust oil. if you look closely. This is usually accompanied by frequent plug failures. At this point, it's best to find the trouble spot and fix it. The same holds true if your crankcase ever makes a squeaking noise on start up or shutdown. (usually the crankcase assembly needs replacing because the crankpin has worn (tapered)causing the rod to slide or walk off the rub away at the tank).

7) And finally, keep your engine scrupulously clean and always protected from elements by a plastic bag or a rag. Filter your fuel well and any time you change containers. Ensure your fuel bulb is not flaking rubber, and replace yearly. When everything else checks out OK and your engine still hics and coughs, it's very possible that dirt in the fuel is causing the trouble. It doesn't take much dirt to raise havoc with the Cox .049 and so remember, "cleanliness is next to Mouseliness".

Part 3 Engines ETC.

How to Lose at Mouse Race

(from a guy who's been there & done that)

A. "The Engine

I assume that if you follow my engine set-up tips, you should have a very decent running engine. I do like the new 'Killer Bee' type crankcase and would recommend them over the older type If you are experiencing case problems. The new Cox 'Venom' engine makes you quite competitive quicker, but you still need to keep in mind most of the engine maintenance tips mentioned earlier. It will not not necessarily make you an instant winner, since both AMA records are held with much older vintage engines. so don't go throwing out 'ole reliable' just yet.

B. "The Model"

I assume you have built the Streaker V with 2 ounce fiberglass cloth all over with 1/4 ounce of wing tip weight, for a total model weight of 6-3/4 ounces. In this event only, heavier is better. It's most noticeable in windy conditions. Speaking of which, at my last Nats in very heavy winds I taped an additional Canadian dollar coin to the outboard wing tip of all our models. We finished 1st, 2nd, 3rd, and 4th, and not one of us incurred a take-off accident. Unlike many designs, the heavily tip weighted Streaker V can darn near fly in a storm if need be. After all, anybody can fly in calm..... but successfully flying In wind separates the men from the boys.

When flying in rainy conditions it is the pilot's job to wipe off the flying lines with a soft cloth often and absolutely just prior to every race. I feel a lot of the sticky film build-up on flying lines comes from the oil laden engine exhaust trails, hence the need for constant wiping. I have lost races neglecting this!

I assume you use a good quality nose wheel (i.e., Perfect with CA around the hub), and solder it on with Sta-Brite silver solder. I have lost face (and races) when my wheel fell off during the race. Regular solder just doesn't do It.

In keeping with the spirit of the event (i.e. FUN), mousers really ought to be RAD looking (radical for those of you not with It). The more neon colors, the more paint and decals the better! All of my top models sport a Mickey Mouse on the top wing, just to remind me that this airplane is to be flown for fun. (You just can't get too worked up about a Mickey mouse' event). P.S., I'll let you all In on a very well kept building secret of mine. My clear painted models all look like the wing and stabs have hi-tech fancy carbon fiber edges. This psyches out most competitors until they find out it's really nothing more than a black felt marker run around the edges just before the clear coat went on! (like I said in Part 1, "deceptively simple.....

C . "Piloting"

An otherwise great airplane / engine combination is obviously disadvantaged by poor piloting. Here are a few suggestions you might find advantageous.

I) Since Mouse races often involve line tangles, (surprise, surprise!) choose a pilot with combat experience. This type of Individual often has a 'never-say-die' attitude even when lines from other (often crashed) models have him wrapped up like a fly in a spider's web. He just keeps on flying, no matter what. A good pilot when suddenly caught up in a line tangle will coolly but quickly change hands it necessary to get out of it. I can fly with either hand and this ability has paid off many times. The lesson here Is that not all line tangles will bring you down if you keep a cool head about you.

A great pilot must train himself in 3 up races to <u>not</u> look at his own model; but watch his opponents and his own pitman for signals. This allows you an important split second to see and avoid accidents just as they happen and fly accordingly. Reed valve engines don't have fuel shut-off s so an often fatal mistake is seen in the following scenario:

2) You are flying along, just overtaking a slower model

and your engine quits! You quickly lose airspeed and sink into the model you just overtook, bringing both models down in a line tangle. Happens every contest it seems, but consider this: A great mouse pilot must:

* Count and be aware of his lappage at all times, i.e., know what lap he is on and know how many laps his model is capable of. (say for example, 30 laps / tank in traffic).

⇒ At maximum laps less five (per example, 25 laps), assume your engine will quit if you pass.

⇒ If you are approaching a passing situation at this critical stage then:

If you are ahead, flap your elevator (up & down) and do not pass since it's only a few laps until you *will* run out of fuel. OR, if you are not ahead, as you approach to overtake, quickly whip hard with just enough height to get by safely. Do not climb any higher than absolutely necessary or your engine surely will quit! As soon as you have just gotten by, stop whipping. You shouldn't have to whip for more than 2 seconds to do this right. You may very well be warned or called for whipping, but much better a warning than a crash. Should your Streaker quit while passing, the whip momentum will allow you to complete the pass even with a dead engine! Such is the beauty of flying a properly weighted Streaker V.

However, it you have ignored instructions and built it too light and not enough tip weight, then you'll find out two things: 1) It doesn't whip well flying high and falls out of the sky downwind, cartwheeling upon landing. 2) It builds momentum slowly and won't keep it's speed up with a dead engine and you end up crashing in a line tangle anyway, ala scenario number 2.

D. Pitting

An otherwise good pit man can cost you the race by launching you without first looking for traffic! Sometimes you will be taking off just as another pilot Is landing. A launch at this critical time involves you in an instant line tangle / crash and a DQ for that race. The solution is 'heads-up' pitting. A great pitman will just grit his teeth and hang on a second or two until it's safe and clear to release. You must remember to always yield to the landing model. Seldom is a race lost by 2 or 3 seconds, but it's always lost on a pitting accident that results in you being disqualified.

Sometimes, other models will pit or crash in front of your assigned pit area. A great pit man will quickly walk to a safer area and signal with hand held high, his new pitting location. A great pit man Is not fazed when forced to relocate, He must be mobile to enable the quickest pitstops under real racing conditions.

E. Conclusion

Gestalt *N:* Where the sum of the whole (working together in harmony as one) Is greater than the sum of the individual parts working separately. A winning mouse race effort can basically be put down to the right amount of 'Gestalt'. That is to say the ability of a good team working together in a nicely flowing manner; yields better results than a team with a killer model but lack of teamwork and practice.

I have been most fortunate to fly with my 2 flying buddies, Roy Andrassay and Las Akre. Their superior piloting and pitting abilities have guided us all to many victories. A big thanks, for all your great work guys. I enjoyed every minute of it.

I also wish to thank the rest of you fellow mouse racers out there for coming out to race with us. It it wasn't for all of you, mouse surely wouldn't be the Nats most popular CL racing event, that it is today. I wish you all the best of luck and most importantly, take it easy on my delicate ego when you beat me!

Editors note: Watch for Paul's Mouse Racing Tips in the next edition.

Feb. 8 1997 Whittier Narrows Recreation Area.
by Kenn Smith

Mouse I

Jed Kusik	1st	5:19
Bruce Teffeau	2nd	5:47
Kenn Smith	3rd	73 laps

Flying Clown

Ken Mogi	275 laps
Dave Braun	258 laps
Jed Kusik	253 laps
Kenn Smith	219 laps

Texas Quickie Rat

Dale Long	1st	6:35.7
Dave Braun	2nd	9:58.3
Kenn Smith	3rd	48 laps

ACLA Slow Rat

Dale Long	1st	7:17.7
Bruce Teffeau	2nd	7:46.3
Dave Braun	3rd	45 laps

Midwest Racing Championship
St. Louis, May 18, 1997
by Ron Carr

Twelve Entries in Fox Racing highlighted the event, along with Betty Fox who was there to autograph each plaque awarded.

NCLRA Fox Racing

Scott Matson*	1st	6:16
Pat Matson	2nd	6:22
Mike Matson	3rd	6:42
Allen Goff	4th	7:07

*note Scott is a Junior, who flew against the open contestants.

Mouse I

John Lowry	1st	6:23
Al Arunski	2nd	6:41
Pat Matson	3rd	6:49

Mouse II

Mike Matson	1st	9:54
John Lowry	2nd	10:26
Pat Matson	3rd	12:28

6th Annual US T/R Championship
Whitter Narrows, April 12-13, 1997

F2C	3 Best Times	
Ascher/Ascher	3:29.91 3:31.82 3:30.03	1st
Willoughby/Oge	3:39.65 3:34.80 3:24.90	2nd
Braun/Kusik	3:43.39 3:44.49 3:39.96	3rd

"B" T/R

Jed Kusik	1st	10:53.07
Kenn Smith	2nd	93 laps

Midwest C/L Championship
Sugar Grove, May 25, 1997

The weather for this event was WINDY to say the least, guests in the 30-40mph range made flying tricky at best. Only one racing airplane made a sudden impact with the ground due to the weather. This can be attributed to the great jobs the pilots did.

In Scale Racing (#317), equipment was the usual Gillott Rossi MK II & III, with a couple of Nelson 15mm FV/RE running strong. In fact during some practice on Saturday, Dave McDonald consistently ran in the 14.28-14.38 range with his Nelson. With several Rossi MK III's running in the 14.4 to 14.7 range. The Nelson seemed to surprise some of those who took advantage of a good day for flying.

Airplane type used by most of the competitors was the Quickie, with a Ohm, and Sweet Pea in the mix. Props by the top runners were the Carbon type, with others using some glass props. As for brand of prop, these were almost all competitor made, with length and pitch being held close to the vest.

Scale Race

Dave McDonald	6:06.67	1st
Stew Willoughby	6:11.97	2nd
Bob Oge	6:12.06	3rd
Larry Dziak	6:21.46	4th

NCLRA Fox Racing

Mel Fawley	7:19.29	1st
Dave Betz	7:25.27	2nd
Scott Fawley	8:00.56	

1997 Northwest Control Line Regionals
May 23-24-25, Roseburg, Ore.

Mouse Race I

Bruce Duncan,	5:23.93	1st
Dave Braun,	5:27.94	2nd
Todd Ryan,	59 laps	3rd

Mouse Race I Jr.

Nathan St. John,	6:00.78	1st
Stephen Cox,	6:07.4	2nd
James Cox,	6:08.45	3rd

Mouse Race I Sr.

Travis Morgan,	5:42.26	1st
Aaron Olson,	9:36.03	2nd
Jesse St. John,	38 laps	3rd

Mouse Race II

James Cox,	10:00.22	1st
Les Akre,	11:00.9	2nd
Travis Morgan,	11:43.11	3rd

Rat Race (heats only, final scratched)

Roger McIntyre,	2:45.71	1st
Mike MacCarthy,	2:55.94	2nd
Dave Braun,	4:02.67	3rd

Slow Rat Race

Richard McIntyre,	5:59.3	1st
Nitroholics Racing Team,	6:55.7	2nd
Roger McIntyre,	10:41	3rd

AMA Goodyear

Cleaver Team,	8:27.78	1st
Les Akre,	61 laps	2nd
S&S Racing Team,	2 laps	3rd

South Jersey Aeromodelers
by Demetrius Washington

The South Jersey Aeromodelers had two contests, the first April 13, and the second May 18. Weather was less than perfect, wind in April, and rain in May. But like true modelers we pressed on, after all we have waited all

winter. The events flown were 1oz Goodyear, 2oz Goodyear, and Quickie Rat.

April 13

1oz Goodyear

Walt Gifford	8:51	1st
Ed Gifford	10:37	2nd
Phil Valente	14:42	3rd

2oz Goodyear

Walt Gifford	9:49	1st
Byron Bednar	11:38	2nd
Phil Valente	12:50	3rd

Quickie Rat

Byron Bednar	6:32	1st
Phil Valente	7:20	2nd
Larry Bush	9:47	3rd

May 18

1oz Goodyear

Walt Gifford	8:22	1st
Demetrius Washington	8:44	2nd
Raul Diaz	11:34	3rd

2oz Goodyear

Walt Gifford	10:25	1st
Byron Bednar	11:00	2nd
Paul Haley	14:09	3rd

Quickie Rat

Demetrius Washington	6:31	1st
Byron Bednar	6:54	2nd
Hillary Kahn	8:48	3rd

Mid-America Championships
Muncie, IN May 31-June 1

This event promised to be the largest turnout of F2C fliers. Nine (9) single entry teams gathered to do battle, the only problem was Mother Nature, and 5 inches of rain in two days. Only one team was able to get in the air, Ballard/Lambert dug out the wet weather wires, and got some practice in during a brief letup in the weather. All of the teams, seemed to have a good time with the social activities that developed because of the rain, with most if not all the teams planning on returning in 1998. So watch your contest calendar for next years event.

NCLRA Points Standings

NCLRA Fox Racing

Pat Matson	27pts
Scott Matson	17pts
Mike Matson	16pts
Les Byrd	9pts

Points Continued

Mouse I

Bill Lee	22pts
Bruce Duncan	17pts
Scott Matson	14pts

Slow Rat

Mike Greb	16pts
Rich Mcintyre	14pts
Dave Fischer	5pts

Scale Race

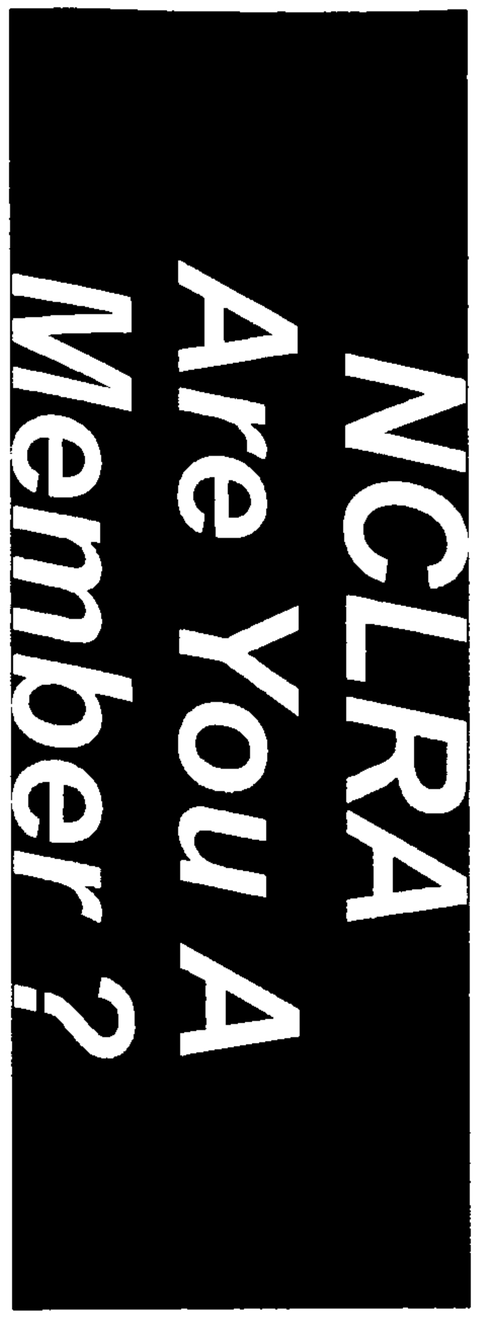
Dziak/McDonald	26pts
Willoughby/Oge	13pts
Ricketts/Ricketts	6pts

F2C

Willoughby/Oge	13pts
Ballard/McDonald	5pts
Perkins/Goldsmith	3pts
Ascher/Ascher	3pts

Fast Rat

Bob Fogg	8pts
Roger McIntyre	5pts
Bill Cave	4pts
Mike MacCarthy	4pts



Contest results should be sent to:
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Last Year we started the "Over heard at the Nats" we'll guess what, it's back. Some of these may have been taken out of context, but we only print the part we hear. So sit back and have a laugh. Thanks to Jim Ricketts for keeping track of these.

"That handle need to be adjusted, really badly"
Mike MacCarthy

"When the airplane gets lower, the ground gets higher"
D. McDonald

"My God its hot in those porta potties" Jim Ricketts

"is that one of my pellers?" Jerry Meyer

"Come on Meyer, get all this stuff out of here" Everyone

"Meyer stop your yipping, and start your flipping"
Dave McDonald

"Where are we going to eat dinner (9am every day)" Jim Ricketts

"Which tube do I fill through" Jerry Meyer

"I am ready to function (after launching his GY 3 up)" Jerry Meyer

"When does the Hot Dog thing open up?" (8:30am) Jimmy Ricketts

"Its only windy in your heat" Unknown

"The needle shouldn't change between these two pellers, should it" Jerry Meyer

"This is mine, I'll give Meyer's back" D. McDonald

"Hey Stew, they said you were whipping"- Oge "Yes" Stew

"I saw it happening, and it didn't phase me" J. Ballard

"It's all set Meyer, don't touch it" Everyone

"Do you have any CA"- McDonald "Of course we do, we are combat fliers" Wilk-Fischer

"You are the first to successfully do F2C & F2D at the same time" Unknown

Watch for more next year, you never know who is listening.

1997 Nationals Roundup

The 1997 Control Line Racing portion of the 71st Annual AMA National Championship, started July 13, 1997. The first event, an unofficial event hosted by the National Control Line Racing Association was Mouse II. Mike McCarthy was gracious and provided the awards for the Junior/Senior class. Thanks Mike. Weather all week was outstanding, and Roy Gould the Event Director did an outstanding job keeping things moving, while being fair to all the contestants. On behalf of the Officers and Members of the NCLRA we would like to say a Big Thank You to Roy, Marcia Matson, Charlie Melancon, and Les Byrd for making this a successful Nats.

Mouse II

Drew 4 entrants in the Junior/Senior bracket, with Open drawing an additional 12. The Junior/Senior bracket saw mostly reed valve engines being ran, with local flyer Scott Matson winning the JR/SR division with a 11:58.98, this established a new NCLRA Jr./Sr. record. Jason Stone 2nd 14:08.59, and Andy Westerheim third at 15:36.23. Bob Fogg of California was the class of the Open field with a Sherikin in a inverted speed ship. Bobs advantage was lost, when the engine would not start in the pits. Other engines seen were the AME, Cox TeeDee, and Reed Valve. Bill Cave successfully defended his Mouse II Championship with a winning time of 10:33.33, using a TeeDee, Rich Mcintyre second at 10:41.91, and third to Roger McIntyre with a time of 11:21.90.

Slow Rat

Was the first official event this year, with 16 open entries, competition was close and hotly contested. Jerry Meyer was looking to repeat his 96 win, however, was unable to do so. Engines used were Nelson Big Block 36, Combat 36, Fox MK VII, Supertiger X40. Props were usually competitor made, and numbers on length and pitch were held close to the vest. Speeds this year were in the 14.2 to 14.5 range, somewhat down from a year ago, but the action was as fast as ever. Slow Rat has turned into a highly competitive event with each competitor looking for that small speed increase.

The winner this year was Mike Greb of Texas with a very good time of 5:35.36. Second to Rich McIntyre with a 5:52.73, while rookie Dave Fischer finished Third at 5:58.04 for the 140 laps with three pit stops. Mike was using a Nelson 36, that never missed a beat for the entire race.

NCLRA Fox Racing

First we would like to thank Betty Fox, John Lowry, and all the folks at Fox Manufacturing for again helping with the sponsorship of NCLRA Fox Racing. Again this year a large turnout in this event shows that the rules we are using are widely received, and are working. Also this year the Jr./Sr. and Open entries were impounded after the final and the engines were tore down to assure compliance with the "stock" engine requirement. Bill Bischoff of Texas finished third in the event, but during the tear down, was ruled to have an illegal engine due to some small dremel work in the intake port. This allowed Mike Matson to move from fourth to third in this years event. Last years winner and record holder Les Byrd finished a close second with an outstanding time of 6:13.83, but only good enough for second this year as Pat Matson set a new NCLRA Fox Record with a time of 6:13.06 while on his way to claiming bragging rights as the 1997 NCLRA Fox Racing Nationals Champion.

The Jr./Sr. bracket saw three good young flyers battling for first thru third places. Scott Matson set a new Jr./Sr. record in Fox Racing with a blistering time of 6:12.71, while Andy Westerheim took second at 6:53.50, and Doug Short of Muncie finished third at 7:14.66.

Again we would like to thank Fox Manufacturing for providing the fuel, and prizes for the Jr./Sr. category of this event.

Scale Race (Goodyear)

Goodyear drew 18 open, along with 5 Jr./Sr. constants. The 70 lap heat races proved again that good team work

between the pilot and pitman is essential for success. This year 8 constants moved from the heat races to the finals, and 7 of those turned times under 3:00 min. In the open category the Gillott Rossi captured the first 3 places in the heat races, Nelson 4th, and the Rossi the remaining places. Times for the quickest teams this year were in the 14.3 to 14.8 range. Again props were of the carbon type usually built by the individual teams, most were in the approximately 6 inch diameter range, and from 4.8 to 5.5 in pitch. Most teams however keep the exact numbers proprietary information. Plugs were of the two piece type, both #1 and #4 element configuration. The aircraft of choice again is the Quickie, this airplane has good geometry for the location of the tank, shutoff etc... The team of Willoughby/Oge established a new 70 lap record of 2:39.21, besting their old record time by approximately 4 seconds.

In the Jr./Sr. bracket, most of the engines were the 12mm Nelson type, with the third place winner running a modified Moki. All of the Jr/Sr. contestants should be commended as they did a superb job handling the airplanes during pitting, and flying. It is reassuring that we have some very good Jr./Sr. pilots coming up through the ranks, and as adults we need to help these youngsters as they hold the future to C/L Racing. The winning Jr./Sr. was Andy Westerheim with a time of 6:37.07, second went to Krystal King with 7:24.55, and third to Doug Short at 9:37.44.

The Open finals provided a never before seen occurrence. During Dziak/McDonald -v- Stone/Oge final, with approximately 20 laps remaining both teams were ordered down, as a funeral was taking place just off the AMA property. This resulted in a re-fly for these two teams. The Dziak/McDonald combination took full advantage of this, and on the re-fly had a perfect race, and pitstops, turning a time of 5:42.97. This was Larry Dziak's first National Championship after many years of trying. Second went to the team of Willoughby/Oge with a time of 5:58.07, they experienced some slow pits when the engine would just not start. The Willoughby/Oge team were defending champions, as they beat the team of Dziak/McDonald last year by .22 of one second. Third this year went to James Ricketts of the team of Ricketts & Ricketts. This was Jim's first Nats trophy after many years of trying. Fourth went to Robert Fogg Jr. who had superior airspeed, but experienced a plug problem after the second pit, and was forced to make an unscheduled stop. Scale Racing is extremely competitive, with any of the finalists having a good chance of winning. Again like most other events the speeds are fairly equal, and the team that dedicates themselves to working with the equipment usually finishes high in the standings.

Fast Rat

These airplanes reaching speeds in the 157 mph bracket continue to show that certain people just love to go fast. Bob Fogg with his composite rats, again proved to be the class of the field. Only some pitting problems kept this from being a total blow out. Bob was turning times a full second faster than most of the competition, and this year John McCollum handled the piloting duties for Bob, and with John's and Bob's experience they make an almost unbeatable team. The rookie team of Wilk and Fischer experienced a truly devastating experience with a line break during practice. This relegated them to flying their second and third airplane. The Backatit team were able to take second and third, behind Bob Fogg's winning time of 5:32.07, Bill Cave second at 5:56.82, and Mike McCarthy third at 6:00.17.

F2C (Team Race)

This year F2C experienced a strong growth, with 13 entries. 11 open and two Juniors from France. This event is one of the most strategically involved events, with the pilot, pitman, and airplane all working as one to achieve the goal of victory. This year also saw the re-emergence of Henry Nelson as a pitman for Bob Whitney. It was good to see Henry back in the circle. The first couple of heats resulted in re-fly's due to line tangles, or mishaps, but after the jitters were all gone some very competitive racing followed. The Team of Willoughby/Oge turned the fastest time in the heat races, with a 3:22.24, while Ballard/McDonald qualified second at 3:29.54, and McDonald/Ballard third at 3:33.40. With the team of Ballard/McDonald taking spot two and three, they were required to remove one of the entries from the finals, thus allowing the team of Perkins/Goldsmith to assume the third spot in the finals.

The finals started with a bang, all three competitors were off at the start, but 4 laps into the race the team of Perkins/Goldsmith crashed out breaking their good Mazinak equipment. This resulted in a refly for the team of Willoughby/Oge and Ballard/McDonald. Again both teams were off at the start and running good. The pits were flawless for the Willoughby/Oge team, while the Ballard/McDonald team were on the verge of being over compressed, resulting in an extremely hot engine during the stops. The 1997 F2C winning team is Willoughby/Oge with a new United States 200 Lap record of 7:09.66, while Ballard/McDonald turned a respectable 7:25.79 for a second place finish.

Mouse I

A schedule change saw Mouse I this year on Thursday, after taking some criticism about the change during the winter, the entries showed that this was a good move. This like all the other events were up over last year, with 36 total entries in Mouse I. Again in this event the Jr./Sr. entries did a good job of flying these small airplanes and should be commended. The experience factor in Jr./Sr. ranged from 3 weeks flying to several years. Like some of the other events, a new record was established. Scott Matson flying a Scorpion kit produced by his uncle set a new Junior 50 lap record of 2:44.85, breaking Bobby Fogg's record established in 1992. Scott backed up his

number 1 qualifying spot, by winning Mouse I with a time of 6:18.15, just a few seconds from establishing a new record for the 100 lap feature. Second went to young Mr. Rolley with a time of 6:54.85, and third to DJ Parr at 8:07.15.

Open Mouse saw 22 entries line up for the honor of being the top Mouse racer. The heat races were extremely competitive, and the cutoff time to transfer to the final was a 2:57.45. Leaving the only other remaining sub three minute time out of the final. The team of Lee/McCollum were able to back up their number 1 qualifying spot with a well deserved victory in the Final turning a time of 4:54.95. The workmanship on this mouse racer is unbelievable. John McCollum has truly completed a masterpiece with his aluminum wing, and his tank setup. Steve Wilk was able to scratch out a second place finish with a time of 5:34.06, third went to Mr. Osterle with a time of 5:37.90, and fourth to Gabe Manfredi with a 5:45.95.

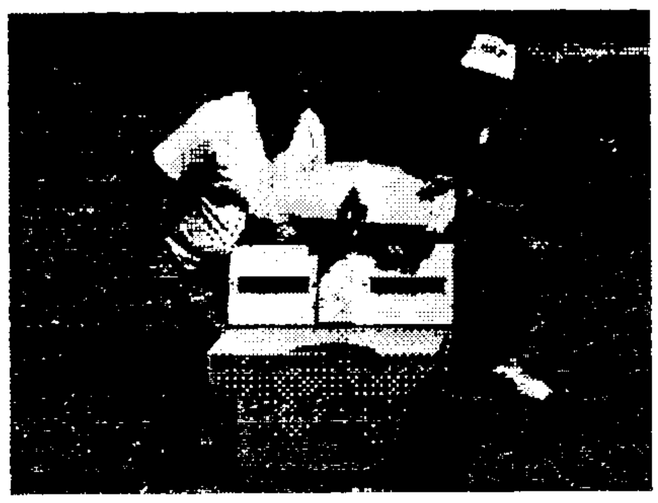
NCLRA Banquet

The annual meeting of the National Control Line Racing Association was held on Wednesday evening. After a good meal, the business portion of the meeting was held. Some of the highlights included the induction of Dr. Laird Jackson into the Control Line Racing Hall of Fame. Doc has been a long time advocate of racing, with his work in FAI, both at the World Championships, and at the United States Team Trials.

The NCLRA also takes the time to pay honor to one of the founding members, with the presentation of the Larry 'Wiz' Dziak Sportsmanship Award. This perpetual award is passed on to members who have dedicated themselves to the betterment of C/L Racing, or have shown extreme levels of sportsmanship, while at the same time being a fierce competitor. This year it was a privilege to present this high honor to Jim Ricketts. Jim for many years was on the administrative side of the Nats, and this year after probably close to 15 years of competition earned his first ever Nationals award for a Third place in Scale Racing. Jim is a class act, always ready with his equipment, always there to help his fellow competitor, be it changing an engine, counting laps etc.. Jim, congratulations.

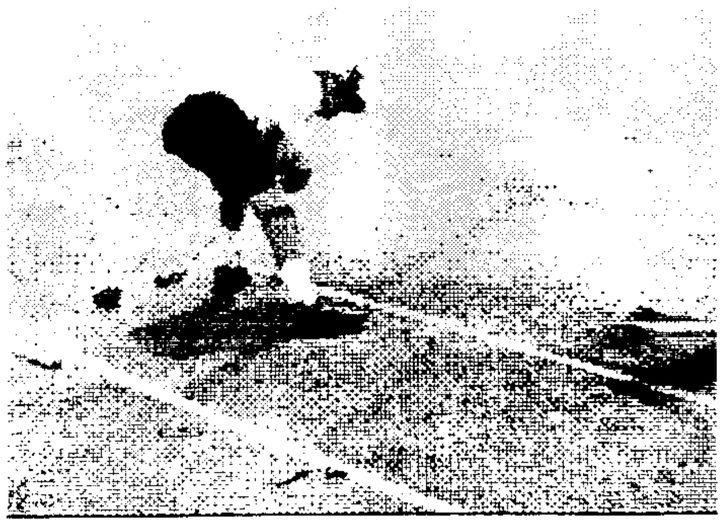
We have added some photos from the Nats, as more are received, they will be in upcoming editions. If you have some photos you would like to share please send them to us, and check out the www page for more of these photos.

Jim Ricketts Receives the Larry Dziak Sportsmanship Award from Dave McDonald



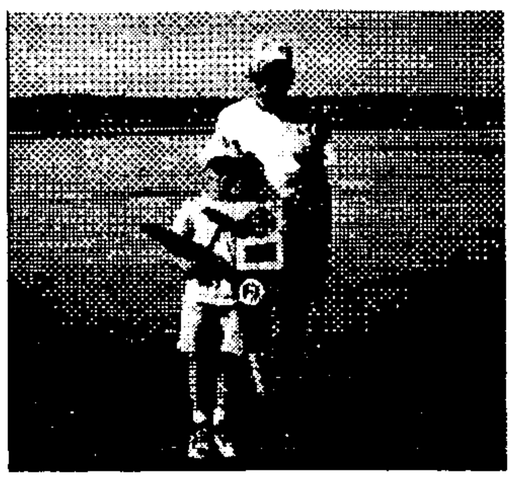
Dave McDonald & John Ballard 2nd place finishers in F2C

NCLRA Fox Race Winners of the JR/SR class. (L to R) Scott Matson Andy Westerheim Doug Short



Pat Matson launches his 1st Place Fox Racer on his way to a new Record 6:13.06

Mouse I Open Winners, Bill Lee (left) and John McCollum. Beautiful Mouse I, aluminum wing construction.



Scott Matson Winner of Jr/Sr Mouse I pictured with his pitman and Uncle Mike Matson. Scott set a new 50 lap record with a Scorpion designed and kitted by Mike Matson.

Thanks to Mike MacCarthy For Providing Awards For Mouse II

NCLRA Bulletin Board

For Sale

Two Vorobiev FE T/R engines, 1 with old style, 1 with new style multifunction valve $250.00 each. Contact:
Kenny Perkins
4011 Lacewood Dr.
Memphis, TN 38115
TX# 901-365-6749

Fox .15 Sch. Russian made, Glen Dye fitted,replacement ABC piston/liner assy's. Less vibration & more power.

1. ABC p/l assy w/ Rossi wrist pin US$40.00
2. ABC p/l assy w/ Rossi wrist pin fitted to Fox rod. US$50.00
3. Fully modified Fox .15 "Clown Racing Special" (you must supply new engine)-----US$100.00

For more info & details please call or write to:

Paul Gibeault
54-5380 Smith Drive
Richmond, B.C.
V6V 2K8 Canada
Phone (604) 525-1020

Wanted

Supertigre X-29 crankshaft Contact:
Ron Salo
#10-8280 Bennett Rd.
Richmond, British Columbia
Canada, V6Y 1N5
TX# 604-279-0530.
E-Mail; rsalo@direct.ca

Thanks to K&B Supplier of 1997 Nats Fuel

Ron Hoogenkamp sent us the following article from the Victorian Control Line News, Thanks Ron.

Propeller Tips
from Joe Supercool

This months hot topic is propeller tips, literally. Normally the shape and airfoil of propeller tips is not of much interest, as they don't much affect performance. However, in some racing classes the propeller tip speeds approach that of sound. This introduces a whole new realm of aerodynamics : the profile of the airfoil section becomes very critical indeed. These classes include F2A and F3D, with F2A the most critical of all.

There is one piece of jargon that cannot be avoided, and that is the Mach number, denoted by M. If we have a situation where the speed is 340 m/s, then the Mach number is defined as 1. Since this is the speed of sound, an airplane flying at this speed is doing Mach 1. At half this speed, say 170 m/s, the Mach number is, by simple proportion, Mach .5.

To get anywhere, we need to be able to calculate the propeller tip Mach number. Firstly we need the speed of sound, Mo, which is a function of air temperature alone. With the air temperature denoted by T in degrees Centigrade:
Mo = .594 * T + 325.56, the units being meters/ second.
The propeller tip speed Vr due to rotation alone is given by:
Vr=.00010472*RPM*R m/s
Here, RPM is revs per minute and R is the propeller radius measured in millimeters. When the airplane is at

full speed V (m/s), the speed of the air over the propeller tip is increased above that due to rotation alone. The 'helical' tip speed in flight Vtip is obtained by adding the airspeed V to the rotation tip speed Vr using the rule of vector addition, viz: Vtip = SQR(Vr^2 + V ^ 2)
where SQR means square root and ^2 means squared.
The tip Mach number is then just:
M = Vtip / Mo , with no units at all, i.e., M is nondimensional.
Consider an example from F2A, with a 75mm radius propeller of unmentionable origin. Lets say you do 300 k/hr (83.333 m/s) at 38000 RPM on a nice sunny day in WA, when T = 40 degrees Centigrade.
Then Mo = .594 * 40 +325.56
=349.3 m/s
Also, Vr = .0001 0472 * 38000 ' 75
= 298.452 m/s
and Vtip = SQR(298.452A2 + 83.333A2 309.87 m/s
Finally, M = 309.87 / 349.3
=.887

The question now is whether a propeller tip speed of M = .887 is something to give us pause. If the Mach number was less than M = .7, we could just forget it, as with most useful airfoils the performance is OK. But above M = .7, awful things start to happen. For a start, the noise produced by the airfoil at the tip starts to rise very rapidly. But much worse, the lift may fall, also very rapidly.

If the airfoil thickness-to-chord ratio (t/c) is above 15%, then at M = .887 the lift of the tip airfoil can actually be negative . That is, the tip is actually pushing backwards ! This is weird, demanding explanation, at least if you want to go fast. By reducing t/c to something like 7%, this problem is overcome, the tip airfoil again providing satisfactory lift. There is something about t/c that is important at high Mach numbers. You cannot use wing type airfoils for high Mach number propeller tips and expect to get good results. Clark Y, for example, is no good unless thinned right out.

The aerodynamic problem is that, above M = .7, shock waves start to form and become stronger as speed increases further. Accompanying the shock wave are increased drag and reduced lift, due to turbulent airflow behind the shock. You may have seen these shocks yourself, when traveling in a jet airliner. Modern jets have best range when flying at a speed which produces a mild shock wave on the wing surface.

If you look out the window, you should be able to see a shadow on the wing surface, just like a thin line reaching from root toward the tip for a few meters. The line may be a centimeter wide, and be moving erratically fore-and-aft a few centimeters as turbulence affects the velocity over the wing. The shock exists at a point where the airflow reduces below the speed of sound. Forward of the shock, the airflow has high velocity and low pressure, while to the rear of the shock the airflow has reduced velocity and increased pressure. The shock wave itself is a thin planar surface, less then .1 mm thick.

The point is, that once shock waves form they dominate the characteristics of the airfoil. Most airliners have very thick wing roots, to provide strength and somewhere to store the undercarriage: You would expect shock waves to form on these thick wing roots, as the air must be speeded up considerably to get over them, and hence be solidly supersonic. However, the designers dodge this in 2 ways.

Firstly, they add an extension to the trailing edge at the wing root, so that the inboard wing planform is almost a delta: there may be little or no sweep on the inboard trailing edge. This trick reduces the thickness-to-chord ratio, thereby limiting the airflow velocity increase over the roots, and avoiding the shocks.

Secondly, they build the airfoil upside down. No joke, look for yourself next time you're at the airport. We noted above that some airfoils lift downward at high Mach numbers: it only stands to reason that they, will lift upwards if you turn them upside down!

Designers only started doing this in the early 1970's. even though data was available in the 1950's which suggested this course of action. To cover their a ... s's, they called the new type wings asupercritical wings" and the airfoils 'supercritical sections'.
There is of course nothing “critical" about them at all. This word arises from the critical Mach number", which is the Mach number at which the shock wave starts to form. on a given airfoil. The associated rapid change in characteristics is called "force divergence".
To be fair, there is some additional sculpting of the section to spread the lift force over most of the chord, and to delay the upper surface shock so that it occurs at the same speed as the lower surface shock. This raises the critical Mach number even higher, yielding more speed and better range.

We must now return to propeller sections. In F2A and F3D, the tip-speeds routinely exceed the critical Mach number of conventional lifting sections, often by a considerable margin. This is disastrous. Propeller efficiency falls hopelessly: all that engine power you worked so hard to get is wasted just by overcoming the tip drag caused by shock waves.

It is the fashion these days to rake the blade tip over the last few millimeters into a scimitar shape. This certainly raises the critical Mach number, in just the same way as does sweepback: but it does little for the lift, or, more importantly, for the lift-to-drag ratio. The problem is that the resultant very narrow tips have lower Reynolds numbers, producing poor flow characteristics that reinforce the poor high-Mach airfoil performance. You just can't beat wide chords for good airfoil performance.

So where does this all leave us ? For M> .7, you need:

1. Squared off tip planforms
2. Supercritical airfoil sections

In Britain, in the early 70's, the Aeronautical Research Association produced a new family of airfoils specifically

for propeller use, and called them ARA-D. Likewise, in the early 80's, Grumman Aerospace, using advanced computational aerodynamics, developed their M series sections.

The ARA-D sections are a single parameter family, based solely on t/c. Since, as we have seen earlier, t/c must be chosen to suit the Mach number, it follows that the ARA-D family depend also on Mach number.

Insofar as propeller tip airfoils are concerned, the ARA-D section for M .95 is very thin (3% t/c) and highly cambered 5%). The leading edge is well rounded and the trailing edge cut off-square. Compared to most model use, this is radical. The camber high point is well forward at 10% for low Mach, moving back to 30% for high Mach.

Empirical model propeller tip sections are thin 6%), have low camber (are symmetrical), with sharp leading and trailing edges. The high point is commonly-at 40%, irrespective of Mach. It is probable that these sections are quite inappropriate for F2A and F3D.

The problems are:

1. Low camber sections have low lift to drag ratios. That is fine for a wing in a dive, but no good for a propeller section which must always produce high lift.
2. Sharp leading edges promote flow breakaway with rapid changes in angle of attack. During a single rotation of a propeller, angle of attack changes occur rapidly due to inflow variations caused by the presence of the airframe behind the propeller, maneuvering and engine induced vibration.
3. Sharp trailing edges do not enhance flow re-attachment at high Mach numbers.
4. Rearward high points produce lower maximum lift.

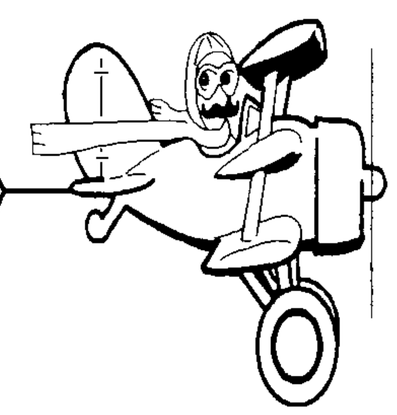
The ARA-D sections overcome these objections. In addition, they delay shock formation, featuring high lift-to-drag ratios at high Mach numbers.

Model-wise, they are difficult to reproduce, and have high variation in zero-lift angle, requiring greater care in setting the pitch angles. These latter objections are overcome only by using sophisticated CAD/CAM production methods. Despite this, it pays to make the section as thin as possible and maintain some camber.

However, it is quite likely that significant performance gains may be had from use of these sections. Next time you see a P51, Lockheed Orion, or Hercules, have a good look at the tip sections. Chances are, what you'll see is essentially a cambered flat plate, similar to the airfoils shown here.

Finally, you may wonder how we do as well as we do if all the foregoing is true. There is just one factor working for us, and that is called 'tip relief'. Because the airfoil is at the extreme end of the blade, it is affected by the 3-dimensional flow associated with the tip vortex. This type of flow delays the formation of the shock wave. As a rule of thumb, airfoils at propeller tips think the tip speed is .05 Mach less than it actually is. Thus, if we computed above that M = .887, then the tip airfoil thinks it sees M = .837, which is a bit better situation.

Contest Calendar



August

16 Dayton, OH Events # 312, 313, 317, NCLRA Fox Racing. Contact Les Byrd 4561 Ozias Rd, Eaton, OH 45320, TX# 937-456-6546.

24 Sewell, NJ Events # 314, 315, Foxberg. Contact Tom Tabor RR# 5 Box 421 Bridgeton, NJ 08320 TX# 609-455-6436

September

7 Gloucester, NJ Event #317. contact Charles McGill 1628 E Walnut Rd. Vinland, NJ 08360 TX# 609-691-7314

12-14 Cascais Portugal. International Open of Cascais 97, World Cup. Events F2C. Contact C.A.C. P.O. Box 30318 1400 Lisbon- Portugal. Contact Person Julio Isidro TX# 351-1-4103028

14 Sewell, NJ Events. Foxberg, .21 Big Goodyear, 2oz Goodyear. Contact Byron Bednar P.O. Box 4386 Baltimore, MD. 21223 TX# 410-523-4711.

20 Tucson, AZ Events. #314, Formula Unlimited, Foxberg, Texas Quickie Rat, "B" T/R, Sport Goodyear. Contact Robin Sizemore, 520-749-4434.

October

4-5 S. El. Monte, CA Event FAI Team Selection F2C. Contact Kenn Smith 521 Jansen Ave, San. Dimas, CA 91773 TX# 909-592-2100.

11 Portland, OR Events #313, 314, 317, 312, 311, NW Sport Race, NW Super Sport Race, Flying Clown. Contact Mike Hazel 1073 Widemere Dr. NW, Salem,OR 97304 TX#503-364-8593

Well as you can see a full newsletter, keep those contributions coming. Watch for more Nats photos, along with photos you send. Plus more from our friends in Australia. Send the information to Dave McDonald, P.O. Box 384, Daleville, IN 47334 E-mail DMcD143@aol.com