



NEWS OF NORTHWEST CONTROL-LINE MODEL AVIATION

1073 Windemere Dr. NW, Salem, OR 97304

Editor: Mike Hazel

APRIL 1992

ISSUE # 97

In This Issue.....

- * Contest Results: March 15, Richland, WA
March 29, Portland, OR
- * Updated Contest Calendar
- * Carrier Notes, by Joe Just
- * NW Competition Standings
- * Fine Tuning Handles
- * Scale, by Orin Humphries
- * 1992 NW Clown Race rules
- * Photos!!!!!!!!!!
- * Lots more good stuff!

Cockpit Chatter



Notes from the
editor's desk
By Mike Hazel

Now that we have a couple of contests behind us, this issue brings back the competition standings segment of the newsletter. As the section heading says, "Flying Line's compilation of event placings by Northwest modelers competing in Northwest region meets." Points are awarded in each event class/category to the top four places, in reverse order of the number of entrants. (ten entrants, first place equals 10 points, second, 9, etc.) Each event type (Carrier, Stunt, Racing) has an overall category which goes through 10th place, and the individual events within that category are generally listed through 5th. The Speed events are not broken down into classes, but rather just an overall category is listed. Another note is that the Expert class of Precision Aerobatics is scored with a 1.5 multiplication factor. We encourage everyone to participate, and see if you can get your name up there in the rankings.

Included in this issue is a flyer for the NW Regionals. Many of these have already been distributed thru other newsletters. It was quite a surprise to this editor to see a Regionals flyer included in the "Aeromail", newsletter of the Norfolk Aeromodelers, out in Virginia!

The contest calendar now has a lot more dates on it. Two major meets are still missing, those are the Bladder Grabber, and the NW Speed Champs. The speed champs are being tentatively scheduled for the first weekend in August. All meets listed are either AMA or MAAC sanctioned, and are open to all entrants. Oops! We had one omission in the schedule: June 28th in Richmond, B.C., see Bruce Duncan's letter elsewhere in this issue for details. By the way, Bruce's letter also includes important information regarding some rules changes for MAAC competition.

I received a letter from Mike MacCarthy, regarding the contest schedule going on in Northern California. Mike is one of our California subscribers, and also the president of W.A.M. (Western Associated Modelers). They have a big stunt meet happening in the Bay area on April 26, which is AMA sanctioned. Several other meets are happening in that region throughout the spring and summer, which are WAM sanctioned. WAM rules very closely parallel AMA, and in most cases are identical. WAM membership can be purchased at a contest site, and is much cheaper than AMA. (yes, it is for insurance coverage). If you are interested, write Mike at: Po Box 788, Glen Ellen, CA 95442.

Have you noticed all of the PR and promotional type of content from the AMA recently? I have seen this in both Model Aviation magazine, and the national AMA newsletter. It must be that the new Sport Flyers Association group is making inroads in competing for members, although the SFA sez that is not what they are all about. You may have noticed in the SFA advertising (in small print) that control line activity is not included. At the Model Expo in Puyallup, I took opportunity to ask the rep in the SFA booth what was up with that. I believe the person I spoke with was Doug Pratt. He explained that at present, they did not have sufficient claims and liability information to be able to insure CL activity. He emphasized that they are working on obtaining the information that they need, because they do wish to include control line.

The Portland contest on March 29th was sure enjoyable, and if you did not attend, it was your loss. Attendance for the events was light, but the excellent weather brought out a lot of local sport fliers and a few spectators. The NW Fireballs were pleased with how things went, and are looking forward to putting on another meet in the future.

Final note: If you wish to attend the Saturday nite banquet at the NW Regionals, you can get a reservation form from contest director Craig Bartlett. The Eugene Propspinnners are requesting that you have your tickets purchased by May 10th. You can still attend otherwise, but tickets purchased in advance will make planning this thing much better. Craig's address is: 205 NE Cedar Lane, Corvallis, Oregon 97330.

Keep on Flying !!!!!

2

21st year!

Northwest Regionals '92

The West's *biggest* control-line model aviation event
May 22-23-24, 1992 – Eugene Airport – Eugene, Oregon

Control-line model aviation action at its best

The Northwest Regional Control-line Championships returns to a three-day format in continuing to provide the largest selection of control-line competition events available in a single contest outside the U.S. National Championships.

You can compete

in these great championship events:

AEROBATICS _ 4 PAMPA classes, Old-Time Stunt and Nostalgia stunt!

BALLOON BUST _ A popular "fun fly" event.

COMBAT _ AMA, Slow, 1/2-A, Fox .35 (Shutoffs required in AMA Combat).

NAVY CARRIER _ Profile, Class I, Class II and .15 carrier!

RACING _ Mouse I&II, Rat, Slow Rat, Goodyear, NW Goodyear, NW Sport and NW Super Sport

SCALE _ AMA Precision, AMA Sport Scale and Profile Scale!

SPEED _ 1/2-A, 1/2-A Proto, A, B, D, FAI, Jet, Formula 40 and .21 sport speed.

JUNIOR EVENTS _ NWSR, NW Goodyear, Class I Mouse, Balloon Bust, 1/2-A Proto Speed

Enjoy one of the world's finest control-line flying sites

Three asphalt circles, four grass circles ... Ample parking
Camping space ... Rest rooms ... On-field hobby shop ... On-field food concessions
WITHIN WALKING DISTANCE: Restaurant ... Airline terminal ... Rental cars
EASY DRIVE TO city of Eugene, motels, restaurants, cultural events
TROPHIES ... MERCHANDISE PRIZES ... GRAND PRIZE TROPHIES

SATURDAY NIGHT BANQUET!!!

And much, much more...

FOR INFORMATION, CONTACT:

Contest Director Craig Bartlett, 205 N.E. Cedar Lane, Corvallis, OR 97330
(503) 745-2025

SCHEDULE OF EVENTS

FRIDAY

Speed (all classes) Noon-5
Carrier (all classes) Noon-5

SATURDAY

Prof./Sport Scale 8:30 a.m.
Rat Race 9 a.m.
Old-Time Stunt 9 a.m.
Carrier (all classes) 9-5
Speed (all classes) 10-5
Fox .35 Combat 10 a.m.
Mouse Race I (Jr.) 10 a.m.
Mouse Race I (S-O) 10:30 a.m.
Mouse Race II 12:30 p.m.
Nostalgia Stunt 12:30 p.m.
Slow Combat 1 p.m.
Goodyear Race 2 p.m.
Slow Rat Race 4 p.m.

SUNDAY

Prec. Aerobatics 8:30-4:30
Speed (all classes) 8:30-4:30
Precision Scale 8:30 a.m.
Balloon Bust 9-4:30
1/2-A Combat 9 a.m.
NW Goodyear (Jr) 9 a.m.
NW Goodyear (S-O) 9:30 a.m.
NW Sport Race (Jr) 11 a.m.
NW Sport Race (S-O) Noon
AMA Combat Noon
NW Super Sport Race 2:30 p.m.

SCHEDULE NOTES

- * Registration is open Friday from **noon-5 p.m.**, Saturday and Sunday **8 a.m. to noon.**
- * Precision, Old-Time and Nostalgia aerobatics entrants check at registration for meeting info.
- * Precision Scale entries **will be judged on Saturday...check at registration for time.**
- * Awards will be presented on Sunday immediately after 5 p.m.

RULES INFORMATION

- * AMA events are per 1992-93 rule book. **Know the rules!**
- * *NW Sport Race*: Stock Fox .35 stunt, stock profile kits or accurate copy of kits, 1-wheel (2") landing gear OK, no shutoff, no fastfill, suction feed, no hot glove. *NW Super Sport Race*: Single-bypass front-intake .40 with .315" venturi, AMA Slow Rat plane specs with outboard suction tank. Lines for both events are .018x60 braided. Write contest director for full rules.
- * *COMBAT* _ All events flown double-elimination. **AMA COMBAT — FLYAWAY SHUTOFFS REQUIRED...Shutoffs subject to ground test: any flyaway in which shutoff fails to work will result in disqualification.** *Fox .35 combat* — Stock Fox .35, any plane/fuel system, two planes max per contestant, 30-sec starting period, .018"x60' lines, AMA fast scoring.
- * *Old-Time Stunt, Nostalgia Stunt, .15 carrier* _ Write contest director for rules.
- * All events over asphalt except Combat, Balloon Bust, carrier, beginner-intermediate stunt.
- * *Navy carrier* — Mufflers mandatory in .15 class, optional in Profile/I/II. No tuned pipes, Magic mufflers OK.
- * **Safety thongs** required in all events.

OTHER INFORMATION

- * AMA or MAAC membership required for all participants, including mechanics. AMA membership available at registration.
- * Only participants and officials allowed in flying areas. All others must stay outside roped-off or restricted areas.
- * Absolutely no alcoholic beverages on flying field during meet hours.
- * *Awards* _ Trophies and merchandise through third place in each event and age grouping, and first- through third-place grand championship trophies. **Approximate value of awards: \$2,000.**
- * Overnight camping is available on or near site. Rest rooms, restaurant, etc., are nearby. A concession truck and hobby shop truck will be on site most of each day.

FOR INFORMATION AND SPECIAL RULES. CONTACT:

Craig Bartlett, 205 N.E. Cedar Lane, Corvallis, OR 97330
(503) 745-2025

CONTEST RESULTS: March 15, Richland, Washington, CBBB

Flying Clown Race (11 entries)

- 1) Kevin Magnuson 200 laps
- 2) Joe Rice 198 laps
- 3) Jim Welch 180 laps
- 4) Ron Hale DNF

NW Sport Race (4 entries)

- 1) Richard McConnell 40 laps
- 2) Joe Rice 1/2 lap
- 3) Todd Ryan 6:25 heat
- 4) Ron Hale 6:58 heat

CONTEST RESULTS: March 29, Portland, Oregon, NWF

NW Sport Race (3 entries)

- 1) Jim Cameron 9:51
- 2) Richard McConnell 9:52
- 3) Nitroholics RT 10:08

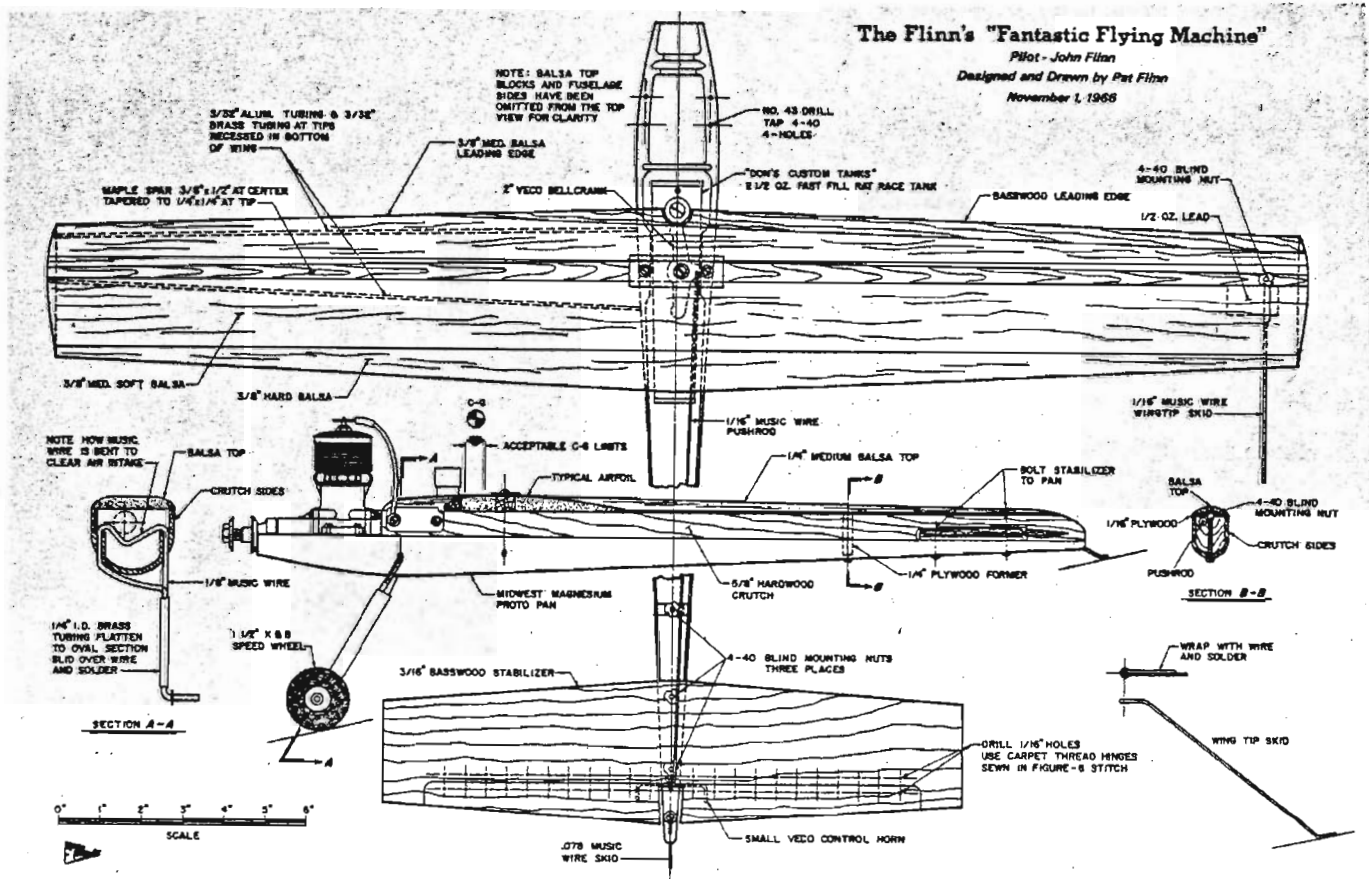
NW Super Sport Race (3 entries)

- 1) Nitroholics RT 8:17
- 2) Bill Darkow 11:32
- 3) Richard McConnell 13:55

Profile Carrier (4 entries)

- 1) Mike Hazel 199.6
- 2) Mel Marcum 162.0
- 3) Richard McConnell 116.8

The rat racer below was one of the hot designs seen back in the 60's. Ye Olde Editor built one, and flew it to first place in Senior Rat Race, at the 1968 Sandpoint Regionals in Seattle.



Mike Hazel, Editor
Flying Lines
1073 Windemere Dr. N.W.
Salem, OR. 97304

Mar. 15/92

Dear Mike;

A couple of different topics, from a couple of different Official positions I operate from.

First as Vancouver Gas Model Club President I'd like to let you and all your readers know of the V.G.M.C.'s official contests. First on JUNE 28th we will hold an OLD TIME STUNT COMPETITION. Rules as to legitimate Old Time Stunt Aircraft will be as per Garden State Circle Burners approved list. This means that the Ringmaster kit S-1 is O.K but the S-1A is not.

On OCTOBER 25th we will hold a NORTHWEST SPORT RACE and if enough interest is shown it will possibly include a NORTHWEST 15 GOODYEAR RACE as well, in any case the N/W Sport Race is for sure. All contests are the the traditional old Rice Mill Road site in Richmond, B.C.

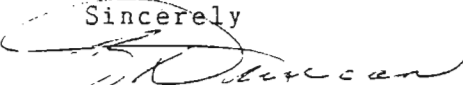
Next in my capacity as a B.C. Zone M.A.A.C. Assistant Zone Director, I wish also to pass along a few new Canadian rule changes. As of the M.A.A.C.'s A.G.M. just held, the following Control-line rule changes are in effect.

- A) all C/L Speed Rules and classifications now match the current A.M.A.'s.
- B) all C/L Racing Rules now match the current A.M.A.'s.
- C) all C/L Racing team pit men must wear helmets.
- D) for all C/L events the pilot must wear a safety thong.

With the changing of the rules, and the added safety factors implemented, it's hoped that legitimate events such as Mouse Race and Goodyear will now start to have some real interest up here.

If you or any of your readers have any questions, they can Fone or Fax me at 604-261-8776, or write me at the below address.

Sincerely


Bruce Duncan
P.O. Box 58037 Stn. L
Vancouver, B.C. V6P 6C5

***** THE FLYING FLEA MARKET *****

WANTED: The following control-line kits, A.J. Aircraft, Firecat or Super Firecat, Guillows, Reactor, Jetco, Sabre Stunt, Kenhi, Cougar & Wildcat Any C/L Speed kit

TRADE: For some of the above kits, A.J. Aircraft Firebat, Veco Redskin.
SELL OR TRADE: Replica OTS All American, Barnstormer, Yak-9, Fox 19 BB R/C NIB. Bruce Duncan,
PO BOX 58037, Stn L, Vancouver, BC
V6P 6C5 phone (604) 261-8776

WANTED: Back issue magazines: Young Men 9/56; Flying Models 2/87; Model Builder 1, 2, 3, 4, 5, 7/77, 3/78; Junior American Modeler 1-2/73, 5-6/74, Also Glo-head for Cub .059.
Ron Bales, 5481 70th Ave SE, Salem, Oregon 97301

WANTED: CL Speed kits, Mike Hazel, 1073 Windemere Dr NW, Salem, OR 97304

WANTED: Sterling Navion kit.
contact John Thompson, 1145 Birch Ave, Cottage Grove, OR 97424

CONTEST CALENDAR

MAY 2/3 -----RICHLAND, WASHINGTON-----

Events: Flying Clown Race, Class I Mouse Race, NW Goodyear, Speed, Carrier.
Site: Marina Park. Contact: Paul Rice, Rt 3, Box 8642, Richland, WA 99352
Sponsor: Columbia Basin Balsa Bashers

MAY 22/23/24 -----EUGENE, OREGON-----

NW CL REGIONALS

Events: four PAMPA classes Precision Aerobatics, Old Time Stunt, Nostalgia Stunt, Balloon Bust, Fast Combat, Slow Combat, Fox 35 Combat, 1/2A Combat, Profile Carrier, Class I Carrier, Class II Carrier, .15 Carrier, Mouse Race I, Mouse Race II, Fast Rat, AMA Slow Rat, AMA GY, NW Goodyear, NW Sport Race, NW Super Sport Precision Scale, AMA Sport Scale, Profile Scale, Speed: 1/2A, 1/2A proto, A, B, D, Jet, FAI, Formula 40, .21 Sport
Site: Eugene Airport Contact: Craig Bartlett, 205 NE Cedar Lane, Corvallis, OR 97330 (503) 745-2025
Sponsor: Eugene Propspinners

JUNE 14 -----RICHLAND, WASHINGTON-----

Events: 1/2A Combat, Sport Combat, Balloon Bust. Site: Hanford School
Contact: Paul Rice, Rt 3, Box 8642, Richland, WA 99352
Sponsor: Columbia Basin Balsa Bashers



"I'm a model builder myself and I told 'em... don't build it out of balsal!"

JULY 11/12 -----BURNABY, BRITISH COLUMBIA-----

PAC INVITATIONAL ANNUAL CL CONTEST

Events: Precision Aerobatics, Old Time Stunt, Fast Combat, NW Sport Race, .15 Sport Race, NW Super Sport, Scale, SuperSlow Combat. Site: Burnaby Lake Sports Complex. Contact: Lyn Murray (604) 467-2573 or Henry Hajdik (604) 438-9888 Sponsor: Pacific Aeromodelers Club.

JULY 11/12 -----KENT, WASHINGTON-----

STUNT-A-THON

Events: Old Time Stunt, Nostalgia Stunt, Precision Aerobatics (PAMPA classes)
Site: Boeing Space Center- North lot.
Contact: Randy Schultz (206)243-1353
Sponsor: Seattle Skyraiders

AUGUST 8 -----RICHLAND, WASHINGTON-----

Events: Flying Clown Race, Old Time Stunt, NW Super Sport Race.
Site: Hanford School. Contact: Paul Rice, Rt 3, Box 8642, Richland, WA 99352 Sponsor: Columbia Basin Balsa Bashers.

AUGUST 9 -----SEATTLE, WASHINGTON-----

THREE BY ONE

Events: 3 x 1 (one plane used for stunt, sport race, and balloon bust)
Site: Carkeek Park. Contact: Randy Schultz (206) 243-1353
Sponsor: Seattle Skyraiders

SEPTEMBER 6 -----RICHLAND, WASHINGTON-----

Events: Class I Mouse Race, NW Sport Race, NW Super Sport Race, NW Goodyear.
Site: Horn Rapids Athletic Complex.
Contact: Joe Just, 709 Crescent, Sunnyside, WA 98944
Sponsor: Columbia Basin Balsa Bashers

SEPTEMBER 12/13 -----KENT, WASHINGTON-----

RAIDER ROUNDUP

Events: Old Time Stunt, Nostalgia Stunt, Precision Aerobatics (four PAMPA classes) Sport Scale, Profile Scale, NW Sport Race, NW Super Sport Race, Flying Clown Race, .15 Carrier, Profile Carrier, Class I Carrier, Class II Carrier, other events tentative. Site: Boeing Space Center
Contact: Joe Dill (206) 631-2367
Sponsor: Seattle Skyraiders

CARRIER NOTES by Joe Just

As promised, here is one of the cheapest ways to get into the Carrier end of our hobby, that being, "making your own three line bellcrank".

If you are anything at all like me (bearded humanoid? -ed.), you will find that there are a number of old worn out (spell that crashed) planes hanging (no carrier pun intended) around your shop, basement, or garage. So, in your attempt to get into the air cheaply with a new carrier plane, why not strip those old planes to the bones and extract a couple of good same size bellcranks. They are usually the least damaged part of that old plane, and just sitting there. Remove the old leadouts, clean them up a bit and get ready to build a new "stacked" three line bellcrank. The diagram should be worth at least a thousand words, so give it a glance and lets get going.

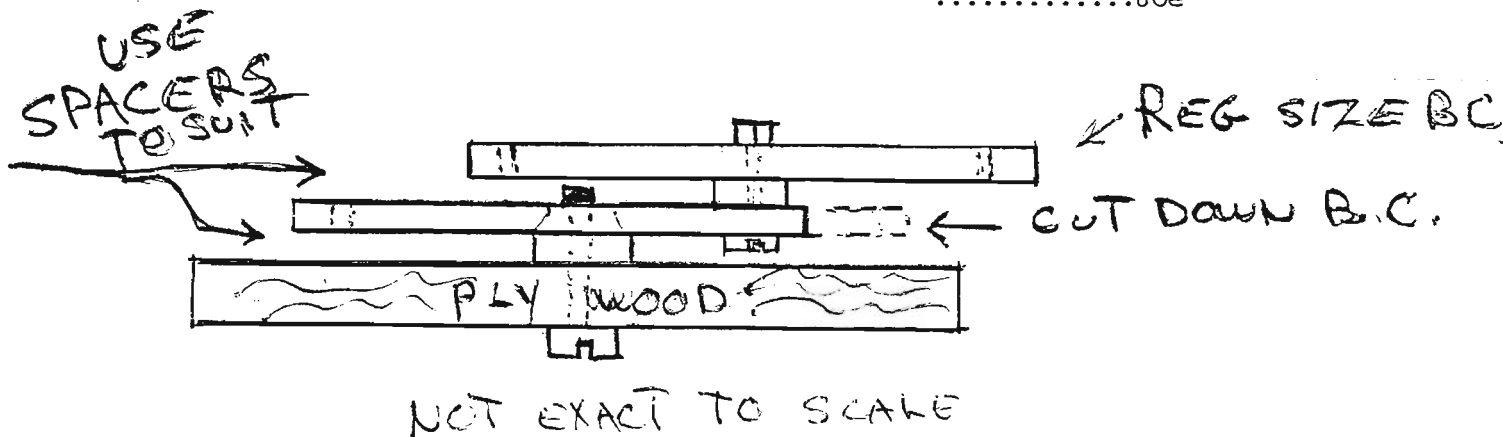
First a word, this method of using stacked bellcranks is not mine, and has been reported on many times in the past by modelers with much more experience and skill than I'll ever have. Also, this is a very safe bellcrank for profile use, but I do not recommend its use in the heavier class I or class II carrier planes which have greater loads put on them with speed and weight factors.

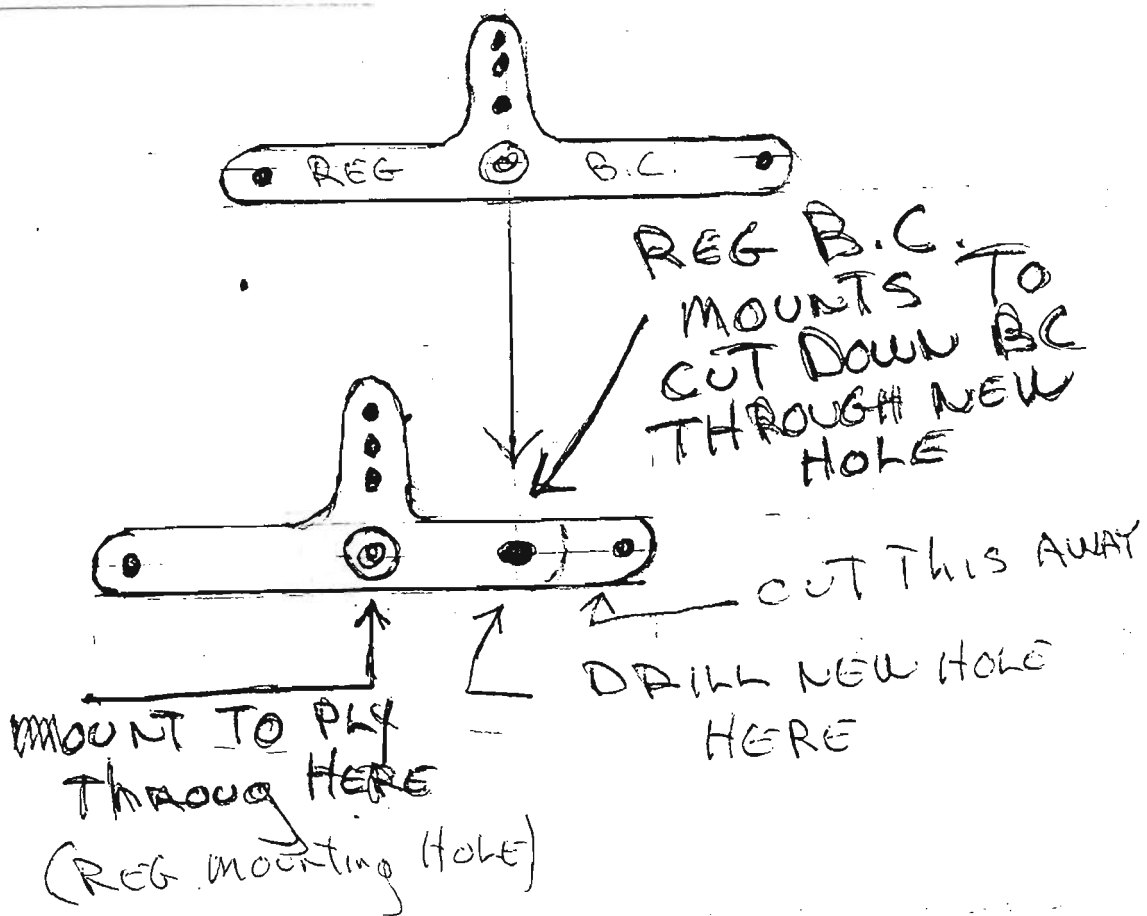
OK, let's give this a try. Lay one bellcrank on top of the other, and then slide the top one to the right until the push rod loop of the top bellcrank is about $\frac{1}{4}$ " to the right of the one on the bottom using a scribe or sharp nail, punch in a small indentation through the center mounting hole of the upper (main) bellcrank, and drill $\frac{1}{8}$ " hole through this mark. This will be the mounting hole for the upper (main) BC. Using a grinding bit, cut away most of the area on the right side of lower (throttle) BC. Using a scrap piece of plywood, drill hole to receive mounting bolt insert through hole, mount lower (throttle) BC using spacers to suit mount main BC through new hole.

You can fool around with spacers until you get the desired height you want, one that will give enough room for the main push rod and the throttle push rod to freeley move without binding on each other. When you are satisfied that all is well, remove all parts and assemble on plane's BC. This whole procedure is very quick, particularly after a couple of tries, and I find that using the scrap plywood aids in getting the crank set up before I have to use the bellcrank mount that will go into your plane. There is one further step that you should consider in the finished plane using this set up, and that is to determine the maximum swing of the throttle arm and mount an additional bolt through the plywood mount so that the arm just hits it at full throttle. By doing this your pull test requirement is much easier as the added bolt will give something for the pull test to pull against other than the carb throttle arm which could be damaged if too much pressure is put on this rather delicate part. I believe that you will find this a very smooth working bellcrank and one that can be used in scale ships as well.

I usually build serveral profile carrier ships each year, and have yet to find much fault with using a stacked bellcrank, in either an enclosed or open to the air installation. Give it a try! Next issue I'll give you a tip or two on flying your first carrier plane. In the meantime, I would like to remind you that there will be four major carrier events in the Northwest this season. One at the Regionals in Eugene, one at the Roundup in Kent, and two in the Tri-Cities, come on out and enjoy.

.....Joe





NW Competition Standings

Flying Lines' compilation of event placings by Northwest modelers competing in Northwest region contests

PROFILE CARRIER (1 contest, 4 entries)

- 1) Mike Hazel 4
- 2) Mel Marcum 3
- 3) Richard McConnell 2

FLYING CLOWN RACE (1 contest, 11 entries)

- 1) Kevin Magnuson 11
- 2) Joe Rice (sr) 10
- 3) Jim Welch 9
- 4) Ron Hale 8

NORTHWEST SPORT RACE (2 contests, 7 entries)

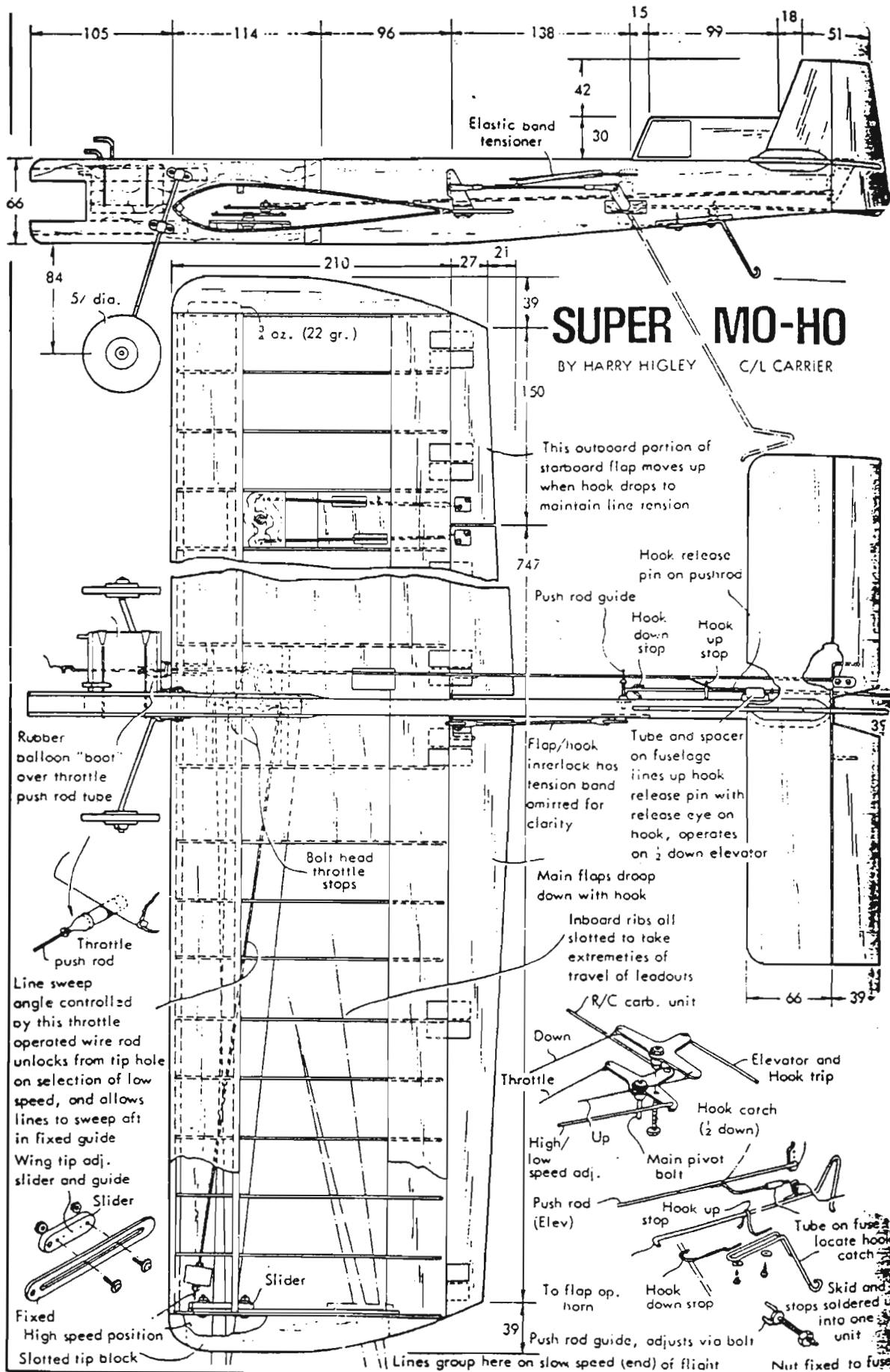
- 1) Richard McConnell 6
- 2) Joe Rice (sr) 3
- Jim Cameron 3
- 4) Todd Ryan (jr) 2
- 5) Ron Hale 1
- Nitroholics RT 1

NORTHWEST SUPER SPORT (1 contest, 3 entries)

- 1) Nitroholics RT 3
- 2) Bill Darkow 2
- 3) Richard McConnell 1

OVERALL RACING (4 contests, 21 entries)

- 1) Joe Rice (sr) 13
- 2) Kevin Magnuson 11
- 3) Jim Welch 9
- Ron Hale 9
- Richard McConnell 7
- 6) Nitroholics RT 4
- 7) Jim Cameron 3
- 8) Bill Darkow 2
- Todd Ryan (jr) 2



FINE TUNING HANDLES FOR MAXIMUM PERFORMANCE

Very few pilots understand or take full advantage of the performance potential of their handles. On an old E-Z Just handle only neutral was adjustable. You either had a small 4" or large 5" line spacing. No fine tuning was possible with this setup. Fine for sport flyers, but useless when you demand maximum performance.

In later years several handles with a bar and slider system were available; many ships were lost needlessly due to loose allen screws or broken cables. When adjusted properly the bar and your knuckles wanted to be in the same spot.

Needless to say, many other handles have been available over the years when all ships were Nobler size. Long arm handles such as the Hunt handles worked great on .35 size ships, but overloaded quickly when used on big ships, especially in the wind.

If you're among 99% of the event competing with large ships, you need a handle to work with modern 4" bulletproof controls. The PRO-STUNT PRODUCTS' handle is designed specifically to work in large powerful ships. Line spacing is variable between 4" and 5" for fine tuning a ship's corner and pilot's skill level. Arms are correct length, the cable is aircraft quality, and the adjustment system is bulletproof; not dependent on tiny allen screws. The "power steering feel" was developed after trying many, many prototype shapes. It looks simple, but when you see how well it works, you can appreciate how sophisticated it really is.

Let's fine tune that handle now--if your ship is sluggish, open up the line spacing one hole at a time. If you still need more travel, drill a one eighth hole above the top setting and epoxy in a short piece of one eighth aluminum tubing.

If your ship is too touchy, shorten the line spacing by moving the cable toward your hand. Without this ability to fine tune you'll never achieve maximum performance.

Some ships require unequal line spacing. The up line should be open as much as possible for ships that turn tighter outside than inside.

By varying the line spacing, you can make a ship exactly fit your reflexes rather than settle for a crude compromise.. Not having this ability

to fine tune at the field handicaps you in ways you never really realize. Some ships that are complete slugs can be made to work well with handle tuning alone. Let your competition have all the handicaps.!

Obviously, ships that turn faster inside need the up line closer to your hand and the down line further away. By experimenting, you'll learn how to adapt a particular ship to your reflexes. When it is fine tuned, the performance will be well worth the effort.

When you want more "power steering", simply zona-saw 1/4" off the arms. For sluggish up control, shorten the arm of the handle only. For sluggish down, zona-saw off the down arm a bit at a time until the feel is perfect. Always countersink or deburr the holes that the cables goes through to avoid fraying the coating on the cable.

To move cable to another setting, take wire cutters and remove one crimped end only. Rethread into the newly selected setting and recrimp using a new crimp. Vise grips work best for this; pull test, of course, before flying.

Put technology to work for you when you choose your next handle. I always have fishing tubing over my line clips at the handle end so they don't twist up during a flight. If you ever had a line clip "unclick" in inverted flight, you'll appreciate the value of this small but super useful tip.

NEVER, NEVER, NEVER wind lines on small reels. **USE LARGE REELS ONLY!!!** Never use crimped lines; wrap all lines with soft copper wire as per A.M.A. Rulebook.

Once you set a handle up for a particular ship, leave the handle permanently on the lines and the lines on a large reel. Mark "Up" with a short piece of red wire. Never switch handles or lines from ship to ship.

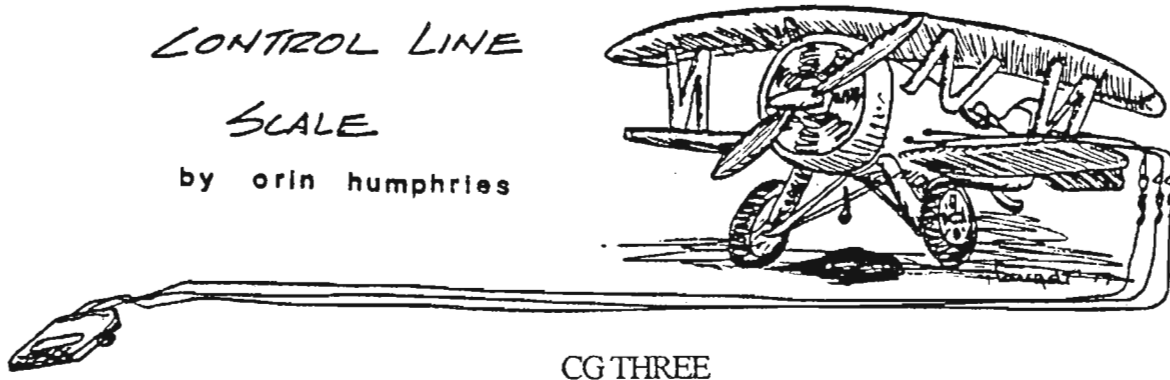
Whether you fly solids or braids, wipe lines with alcohol before each flight. Even braids get gummy.

Any newsletter editors who wish to reprint this as part or whole, please feel free to do so.

CONTROL LINE

SCALE

by orin humphries



In the Early '80s six fishermen from the Spokane Area chartered a Beech D-18 to take them on an excursion in British Columbia. They were all killed on takeoff due to the plane's having been loaded with an aft CG which the pilot didn't catch in his pre-flight planning. Yet some Free Flight and some R/C models thrive on CG's between .33C and .75C (chord) What gives?

"Moment" is a strange sounding word in this usage. It sort of means leverage, but torque would be better, the tendency to cause something to rotate. Lets say you have a piece of 2x4 sticking out from the wall, a couple feet long, nailed to a stud in your garage wall. You walk up to the free end and push on it, parallel to the wall. You have done several things. The force, or load, you put on it tends to cause it to move, but it's nailed firmly. This load creates a shear load where the piece is anchored. The load also creates a torque, or moment, at the anchor point since you applied a load at a distance from the anchor point, and the load's line of action does not pass through that point. Just like a torque wrench on a nut. You pull on the handle, usually square with it, and the nut tends to turn. Okay, now you know what a moment is. 'Nuff said.

Consider an airplane sitting in calm air on the ground. The air pressure is evenly distributed on the wing. There is no lift and no moment on the wing mount. Same for the horizontal tail. Now go fly it. The air pressure is NOT uniformly distributed, making flight possible. This uneven distribution creates several things on the wing: lift and a moment. (Yes, drag, too.) The moment is there because the pressure is not symmetric, and this is a negative moment, i. e., it makes the leading edge, and, hence, the plane's nose, want to pitch down. For a conventionally configured aircraft the CG must be in front of the aerodynamic center. But wait, doesn't the lift vector's being at a distance from the CG also create a moment, just like the torque wrench? Yep. You got that right. Look at the first diagram.

PRINCIPLES OF STABILITY AND CONTROL 367

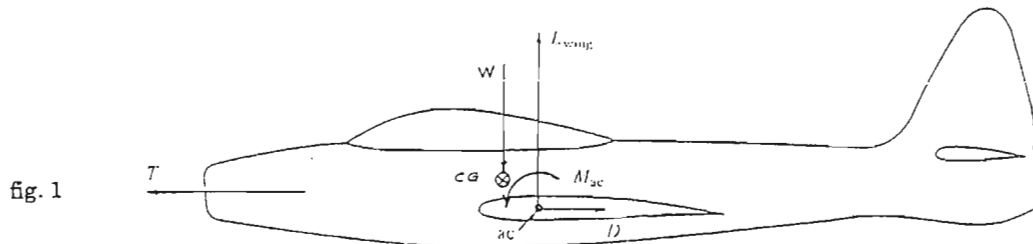
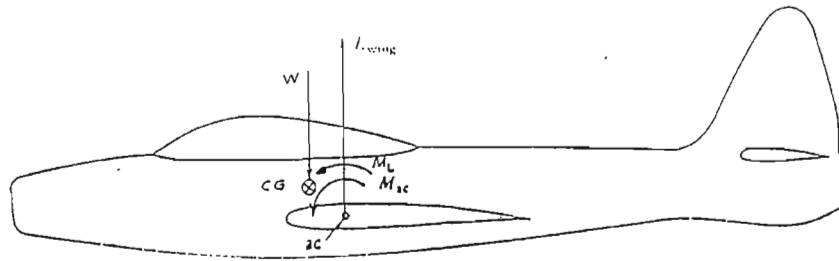


Figure 7.9 Contributions to the moment about the center of gravity of the airplane.

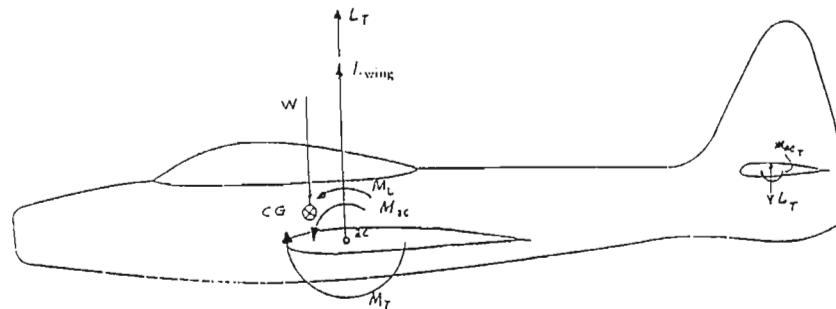
You see the lift vector, the CG, and an arc denoting the wing's own nose down moment from the pressure distribution. We must add another arc to show the moment due to the lift vector's being at a distance from the CG. By the way, the CG is a natural point around which the plane will do all of its rotating. Look at the second diagram.

fig. 2



What you have here is a plane that wants to lift itself but which will immediately pitch into outside loops with no recovery. Enter stage right the horizontal tail. In order to keep the nose where you want it, something will have to produce a nose up moment to balance the two downers on the wing. Flying wings aside for now, that's the job of the hor. tail. It must produce a negative lift to hold the nose up. Since it acts at a considerable distance from the CG, it doesn't need much negative lift to make the right amount of positive moment. Length of arm times load = moment, like a little kid way out on a teeter totter. See the third diagram.

fig. 3



As long as the moments all balance the nose will stay where you point it. Note that the wing lifts not only the weight but also carries the tail's negative lift as well.

Actually, we never talk about the center of lift or of pressure. We talk of the aerodynamic center, the ac, the point at which the moments are the same for all angles of attack. Easier analysis. At stall the center of pressure is at negative infinity. We also use the mean aerodynamic chord, mac, of a wing. There are many articles on how to find the mean geometric chord which is close enough to the mac for most purposes. Okay.

The ac for conventional airfoils is usually within 1-1/2% of the 25% mac station on that airfoil chord, forward of it. Bottom line: your CG must be in front of the ac, or, forward of 23-1/2% mac station, for stable flight. The further forward it is, the more nose heavy/stable it will be, like it's on rails. The closer you get to the ac the flightier your bird gets, like a Flite Streak. You are close to the "neutral point".

The neutral point is where your tail has virtually no effect on pitch control whatsoever. Just put your CG too close to the ac and you will have uncontrollable summersaults in the air like my Vigilante did once. Others find this FUN to watch. Next time, how do F/F and R/C get away with grossly aft CGs?

Orin Humphries, 19805 48th Av. W., #A101, Lynnwood, WA 98036, 206-776-5517

NORTHWEST FLYING CLOWN RACE
1992 RULES

1. This event is intended for all flyers and pitmen interested in a simple, "laid back" racing event which uses a common aircraft, emphasizes both speed and economy, and encourages the use of a wide variety of engines.
2. All pertinent AMA rules from the AMA Control-Line Racing Unified Rules apply, except as follows.
 - 2.1 Pull test is 25 pounds. Lines are .015 stranded steel. Length is 52 feet plus or minus 6 inches, measured from the center of the handle to the fuselage.
3. Engine: Any design or make of piston engine is allowed, except that maximum engine displacement is limited to .19 cubic inches. Modifications are not restricted within the limits of the AMA Safety Code.
4. Fuel Tank: Any design of fuel tank is allowed, including pressure systems, except that fuel capacity is restricted to 1 ounce. The fuel tank shall be fully external of the plane, on the outboard side of the body, and all in front of the leading edge.
5. Fuel: Fuel used shall contain a maximum of 10% nitromethane with 20% lubricant and the rest methanol. Fuel may be obtained from contest management. Diesel engines may use diesel fuel.
6. Aircraft: The only aircraft allowed is the PDQ Flying Clown or faithful replica. Changes to the planform, profile, or wing thickness will not be allowed. Wheels must be at least 1 inch in diameter, and be spaced laterally about 7 inches.
7. No hot gloves, fast fill, or "Trick" pitting equipment is allowed.
8. Races: All preliminary heats and the final race will be timed for 15 minutes from start to finish. The contestant with the most laps wins.

C/L SPEED, CARRIER, RACING

MAY 2 & 3

COLUMBIA POINT MARINA PARK
RICHLAND, WASH.

SAT, MAY 2 :

CL I MOUSE	9 AM
N.W. FLYING CLOWN	10 AM
N.W. GOODYEAR	12:30 PM
SPEED	1:30 PM - 5 PM
CARRIER	9:AM - 5 PM

SUN, MAY 3 :

SPEED	9 AM - 4 PM
CARRIER	9 AM - 4 PM

SPEED CLASSES : 1/2A, 1/2A PROF, PROTO, A, B, D,
SET, FAO, .21SS, FAI

CARRIER CLASSES : .15, PROFILE, CL I&II COMBINED

ALL EVENTS JSO

TROPHIES & MERCHANDISE, ALL EVENTS

CDs : JOE JUST (509) 837-5983
PAUL RICE (509) 627-3142

SPONSOR: COLUMBIA BASIN BALSA BASHERS



AMERICAN JUNIOR AIRCRAFT HISTORICAL SOCIETY, INC. is dedicated to the development of aero-space education programs for youth and the preservation of model aviation history.

Many have asked, "Why do we need a model museum here when there's already a national model museum in Reston, VA?". The fact is, it's a long way from here and many of us will never be able to see it.

In our research, we have discovered that many model aviation "firsts" originated here in the Pacific Northwest. It was also noted that little, if anything, was being done to preserve this history. Too much has been lost or neglected. It is time now to save the fascinating history of the many Northwest firms and individuals who so significantly impacted our hobby and its industry. They gave us a heritage to be proud of. We feel it's our duty and responsibility to preserve it for them, for us, and for those yet to come.

Join the AMERICAN JUNIOR AIRCRAFT HISTORICAL SOCIETY today and help preserve this heritage, and to establish the NORTHWEST MODEL MUSEUM.

A.J.A.H.S. was organized as a non-profit corporation registered with the State of Oregon on June 5, 1987. The officers are: Gordon V. Walker, President; Patrick J. Webb, Secretary; Cosmo Salibello, Treasurer. The Board of Directors include the above officers and, in addition: Fred L. Macy; Frank Macy; James Longstreth; Don Anderson; Gerald Campbell; and Larry Wilson. Technical Historian and Advisor: Frank Macy.

APPLICATION FORM

AMERICAN JUNIOR AIRCRAFT HISTORICAL SOCIETY, INC.
P.O. BOX 22885 MILWAUKIE, OR 97222

Join now and become a Charter Member.

NAME: _____ {Type or print clearly}

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____ PHONE: _____

ANNUAL MEMBERSHIP-\$20.00 FAMILY MEMBERSHIP-\$30.00

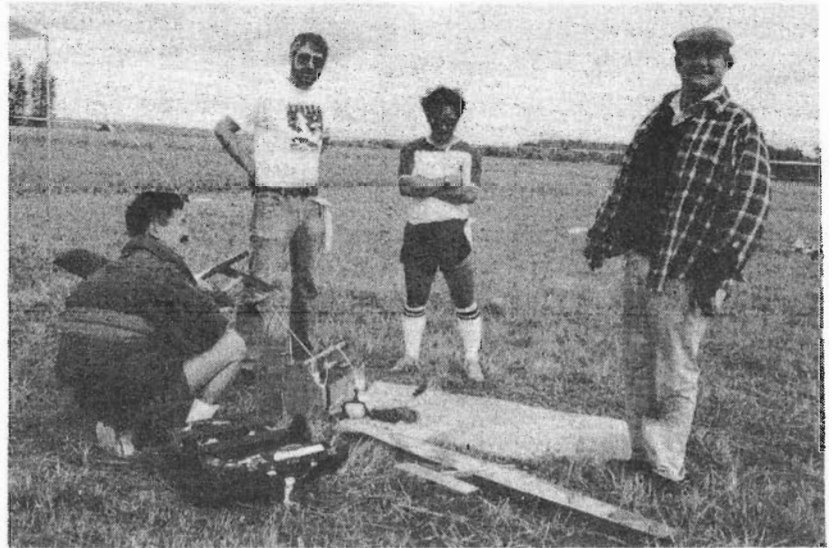
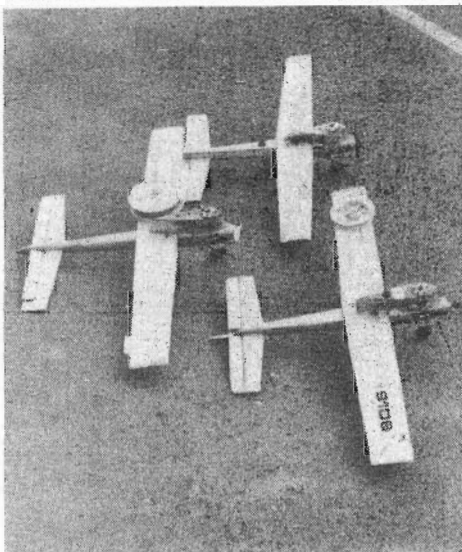
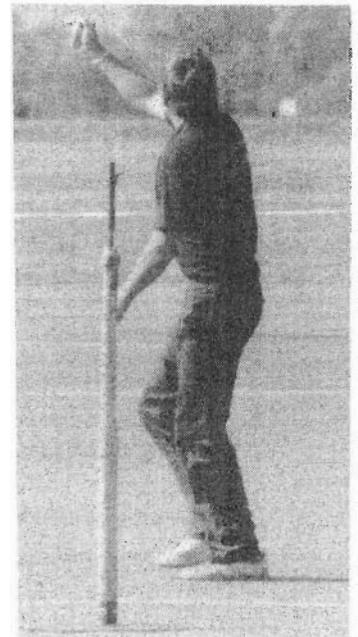
I would like to donate _____ to help establish the
NORTHWEST MODEL MUSEUM.

SIGNED: _____

DATE: _____

Below: Awards presentation time at NW Regionals. Can you guess the year? Check the faces present, and size of the kids for clues.

Chris Sackett gets his FAI speed ship off the ground, and heads for pylon. (Kent, Washington)

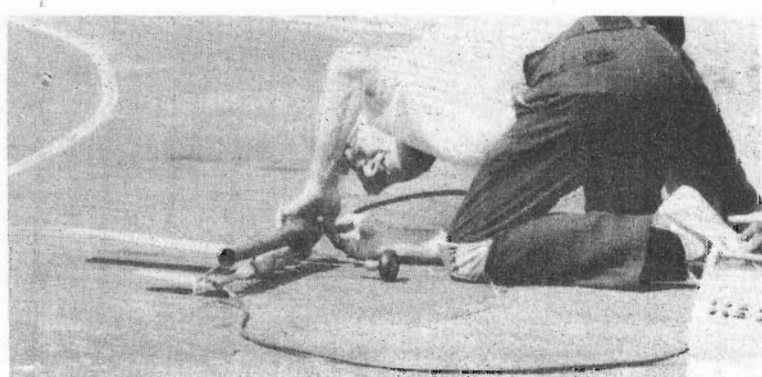


Above: A rare sight these days: Three rat racers in the same place.

Some prominent NW Combat fliers taking it easy between rounds at recent Bladder Grabber. (L to R) Naemura, Thompson, Nakano, Carver.

Below: Jerry Thomas applies air and spark to Jet speed job.

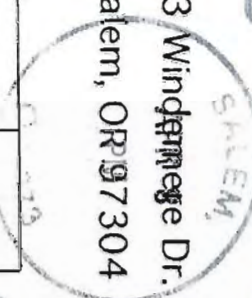
John Hall ground tests his Profile Carrier ship at 1987 Regionals in Eugene.



FLYING

LINES

1073 Windermere Dr. NW
Salem, OR 97304



FLYING LINES is produced by a dedicated staff of volunteers interested in keeping lines of communication open between Northwest region control line modelers. FLYING LINES is independent of any organization, and depends upon the financial support of its base of subscribers.

FLYING LINES is published nine times per year. Subscription rate for USA is \$14.50, and \$18.00 for Canadian subscriptions. Check or money order may be made payable to FLYING LINES. U.S. funds, please.

RUSH TO:

JOHN THOMPSON

1145 Birch Av

COTTAGE GROVE, OR

97424

FIRST CLASS MAIL