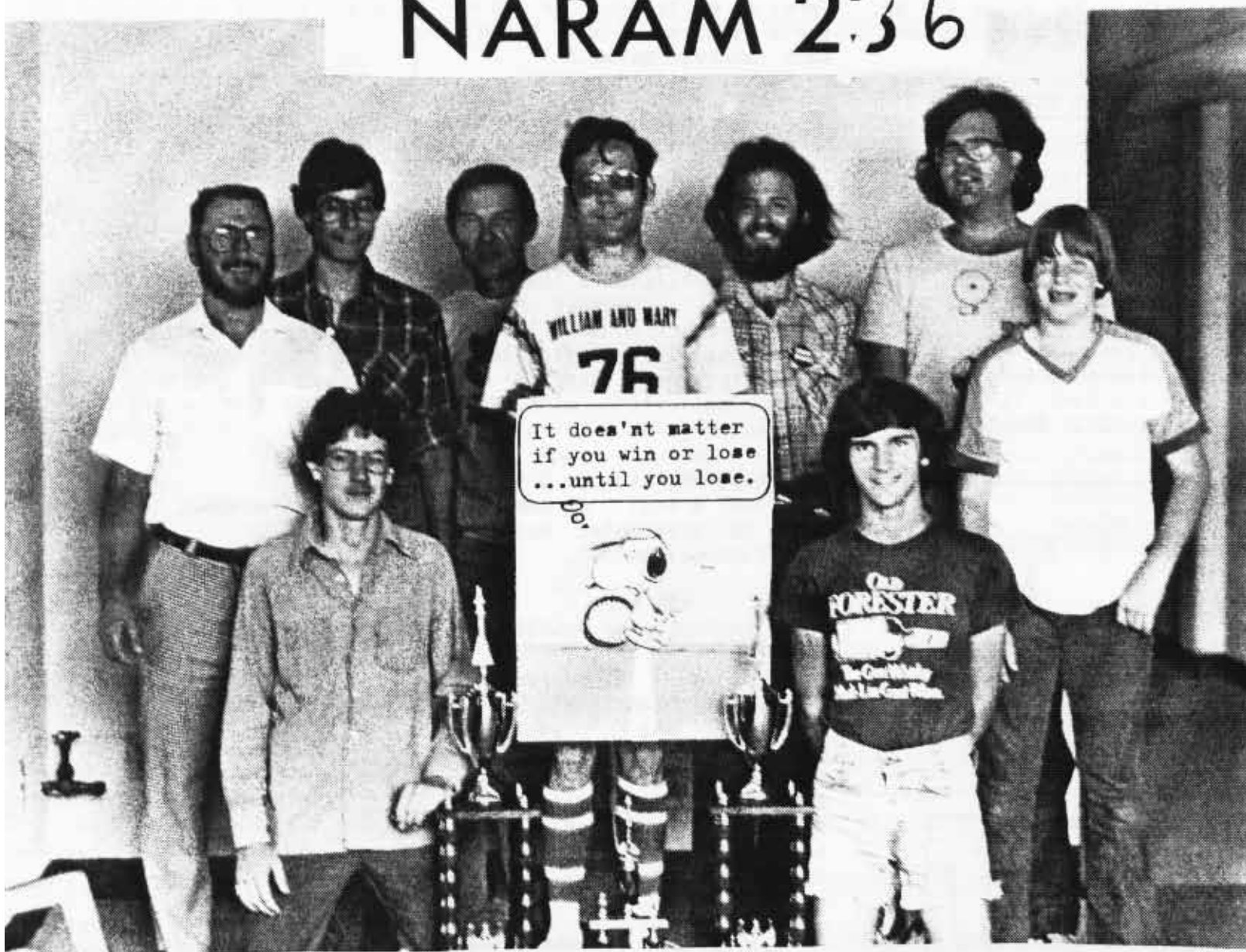


THE LEADING EDGE

VOL.4 NO.5

NARAM 236



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DÉJÀ VU?

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MONTHLY NIRA MEETING Aug. 3
G.E. Civic Center 7:30 PM

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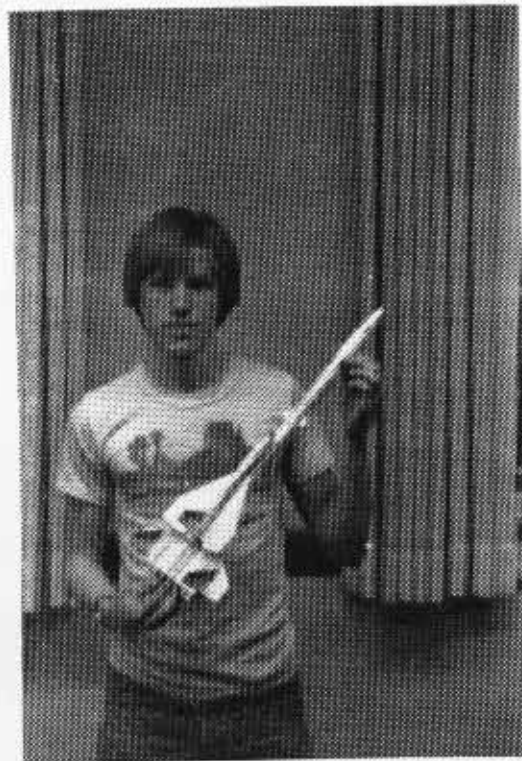


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MODEL OF THE MONTH WINNERS



The Model of the Month Winner for June is Henry Veldenz and his plastic model conversion. Congratulations, Henry!!



The Model of the Month Winner for July is Tim Marcy and his Estes Orbital Transport. Congratulations, Tim !!!

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HALFTONES	- Tom Pastrick
MAILING LIST	- Bob Kaplow
TYPIST	- Mark Bundick



THE LEADING EDGE

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GETTING STARTED IN BOOST GLIDE.

IT AIN'T AS HARD AS IT LOOKS!

CONTINUING IN BOOST GLIDE
or, "It's a Bit Harder Now."
by Bunny

Advanced Trimming

Last issue, we finished up all our primary glider training. Now you should have some idea of how these things work, and have probably got a couple of good flights and good crashes under your belt. You're ready to move on. Our first article will deal with trimming, and how to get better at it. As I said last time, trimming your glider is a lot of fun. In fact, we used to have hand-launched BG contest at my old club's launches. Trimming does take patience though. But a few simple principles will help you through.

Think of your glider as a see-saw or tetter-totter. The balance point is the center of the see-saw, the wing is a "weight" or "person" on one end, and the stab is the

other. All you have to do is balance the see-saw for a stable glide.

We balanced things before with clay weight. It works OK assuming the glider has a stable design and most gliders are. By putting clay weight on or taking it off, you are really altering the stability margin of the model. This will result in a flat stable glider, but it sacrifices glide performance. You can increase your times and get rid of dives and/or stalls with a more efficient method.

The secret to effective glider trimming is to set a balance point that gives you a stable machine, then warp all the flying surfaces, wing, stab, rudder, to get a flat glide.

To begin, find your glider's neutral point. This is actually the same as the center of pressure for the glider. While there are formulas to help you do that,

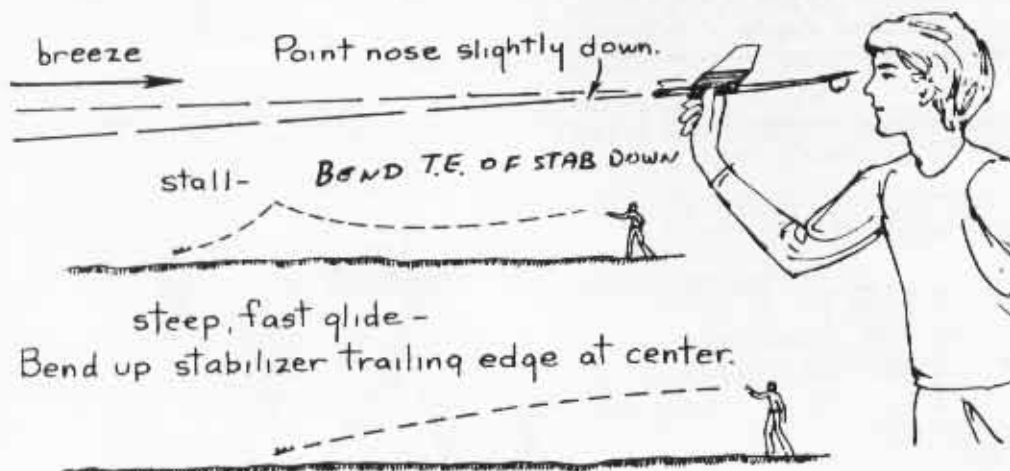
there's a simpler way. Wait for a day with a stiff breeze. Go outside with our glider and hold it pointing the nose straight up. Now try to balance the glider with one finger so that the breeze pushes the glider onto your finger. Keep moving your finger up or down along the boom until it wants to stay vertical. The point at which your finger is located is approximately the neutral point.

If your glider is stable, any CG location in front of the neutral point will be OK. It's smart to leave a good static stability margin, say between 10 and 30% of the root chord. Use clay to get the glider to balance ahead of the neutral point.

Now, take your glider to a grassy area. Point the nose of the glider at a point about 20-30 feet in front of you and give the model a gentle toss. Do this five or ten times to get an idea of what the model wants to do. Watch for stalls and dives.

If the model stalls, you want to force its nose down, right? So do what I do with controls on the full-sized Cessnas. Bend the trailing edge of the stab DOWN. Like so: /------. Don't go hog wild. A little bending goes a long way.

If you get a dive, bend the trailing edge of the stab up,



CONTINUED ON PAGE 8

MITCON XVII

OR

"BACK TO BASICS"

"Mellow" was the word for MITCON-XVII. There was much less of the hightech atmosphere that MITCON had been noted for and more of a friendly get together. This was mostly due to the small turnout of about 25 rocketeers. Friday evening saw Bob Tycot giving the keynote address, titled "Back to Basics". Following his short talk was the instant kitbash contest. A drink and nosh party then gave the attendees a chance to get to know one another. I had a reunion with a fellow DEC employee, Gary Hughes. I last saw him as the interpreter half of the Australian 1980 WSMC team. He has been transferred to the States and we should be seeing more of him at rocketry activities soon.

Notably absent from this year's MITCON were any entries in R&D. This seems to follow the trend in R&D at the NARAM. I still remember my first MITCON six years ago; there were at least a half a dozen entries in R&D. It is most unfortunate that the increase in technology available to the model rocketeers has not produced the increase in Research and Development that this hobby needs for its growth. There also weren't any entries in 1/2 A RG or static spacemodeling, and few entries in the photo contest.



Landis and Flynn with their "Instant Space Shuttle". At least they got all its engines lit!

Saturday morning started with the launch. It featured many dull kitbash models and only three entrants in the B standard streamer duration event. The only noteworthy flight was the Flynn/Landis



Jake Kane prepares to static test an engine. Why is he smiling? Maybe he enjoys his work!

Space Shuttle. A meter tall, the model was hotwired out of foam, complete with external tank and SRB's. Geoff flight converted it during the instant kitbash session. When finally launched, it rose slowly in a scale-like manner under the smoke of a D12 and two C6's, reaching an altitude of about 4 meters. It then began its RTLS maneuver, (That's "Return To Launch Site" for you folks not in the know. - RG) landing right next to the pad.

There were only a couple of discussion groups at any one time; thus I didn't have too many choices to make. First up Saturday was Geoff Landis, with a good introduction to model rocket flight analysis. He managed to cover a lot of technical material without losing everyone in the math. (Are we talking about the Geoff Landis I know? - Bunny) Next up was an impromptu slide and video type presentation by John Langford on **Monarch**. **Monarch** is the MIT human powered airplane that eventually won the Kremer Speed Prize. At the time, **Monarch** had demonstrated the speed, 20+ MPH, and turn ability to win, and the team was waiting for improving weather.

A combined session, with Bernie Biales talking about airfoil selection, and Mark Drela, demonstrating advanced construction techniques, was next. Bernie's group talked

MITCON XVII

OR
"BACK TO BASICS"

about airfoils for rockets as well as BG's. Mark Drela is an expert indoor hand launched glider builder and flyer. He has brought composite structures into the hobby, setting US records in the process. His use of carbon fibers have applications in BG and RG events. The carbon fibers are laid criss-cross the balsa grain if increased torsional strength is needed (e.g., in supersonic fins) and parallel to the grain to reduced bending (e.g., booms) is the goal. Attachment is with Ambroid's cement, thinned 50% with acetone. Both sides must be covered to have any increase in strength.

Art Rose talked about helicopter models and the effects of different rotor shapes on model performance. The best of three shapes tested was a constant L/D model. The blade is pitched at -90 degrees in the center, increases to zero at 50% of span, and has +4-6 degrees at the tip. Art also found that sink rate didn't depend on the aspect ratio of the blades, but that RPM did. Trip Barber finished up with a session on high power rocketry, discussing engine technology, supersonic flight and safety.

The Standards and Testing Test Cell session was held twice, and I skipped it,



Bernie Biales gives a lecture on airfoils for gliders and supersonic!



Trip Barber gives a lecture on High Powered Rocketry.

having seen it at previous conventions. I instead followed Trip Barber and MITS members over after the convention. Trip test fired two Aerotech G motors to obtain data for the NAR Blue Ribbon Panel on high powered rockets. Within the 62.5 gram propellant limit, one can make a G motor of about 125 NT-sec. Both motors, a G25 and a G125 were right at that limit. The G25, a "moonburner" with a grain down the side of the motor, had a peak thrust at 1/2 second, a flat power range for the next three seconds, and a taper down to zero at 5 seconds. The G125 was a typical core burner, but with a roar so loud, Trip jumped at ignition. The thrust was so strong that smoke blew through the door of the test cell. Maximum thrust was about 160 newtons, enough to loft even the fattest cat. Complete results of the studies will be presented to the Trustees at NARAM.

All in all, a fine old convention. Be there next year, and bring your R&D report.

Bob Kaplow

PORTRAIT OF THE LATE NIGHT BUILDER

You know a modeler has had an all-night building session when:

1. He's wearing odd combined colors of "nail polish" on only one hand.
2. His fingers are glued together.
3. His fingers are glued to model.
4. He doesn't leave finger prints.
5. He has a huge balsa dust dandruff problem in his hair.
6. He yells if you approach his plastic or scale model because it's still wet. (Note: decals have already been applied.)
7. He has a white powder all over his shirt and pants.
8. He tells bad puns or jokes. (Note: excluding a person with the initials "RG", who always tells bad puns or jokes.)
9. He has fluorescent red or orange nose hair.
10. He has silvery material stuck to the bottom of his shoes.

Now that you know the disgusting symptoms of late night building, I am confident you will do your best to avoid this contagious virus by building all your models a month in advance.

Larry London

ISSUES OF HIGHPOWER-- ONE TRUSTEE'S VIEWS

by Bunny

For the past 18 months, the political issue within the NAR has been high power rocketry. Only now is the NAR really coming to grips with the issue. The next few months will see the formulation of an operational NAR policy on the "proper" place and limits of high powered rocketry. I'd like to offer one trustee's prospective on these issues. I'd also like to receive feedback from NAR members during NARAM-26 about these issues.

The first issue concerns the illegal manufacturer and shipment of motors not meeting the DOT requirements for shipment. Both the NAR and high power community agree. The illegal sale and shipment of model and amateur rocket motors cannot be tolerated and must be stopped at all costs. Letting a few irresponsible people jeprodize our freedom to fly rockets would be folly on the part of the NAR.

From here on, the issues become more muddled. Should the HIAA-NAR Safety Code, NFPA 1122, DOT shipping regulations and the Federal Air Regulation be raised to "legalize" G and larger engines and rockets over 16 ounces, and allow such activities to be classed with model rockets?

The Board, asks a simple question. Do such changes significantly increase the probability that an average consumer will be hurt or killed in a model rocket

accident? The answer is currently unknown, but Trip Barber's special committee is gathering computer simulation data on the flight characteristics of such models. I am convinced that Trip's study will stop the casual, totally unscientific debate about the relative safety of these vehicles. ("I know it's safer, because bigger models, even with an F, move slower than a model rocket with a B.")

Issue number three: should the NAR expand its service offerings to meet the high power market needs? Debate here has been understandably murky. Until the Board reaches some conclusion about the safety, it's hard to design new services or open up old ones to high power people.

Unfortunately, time waits for no trustee nor high power person. Illegal rockets continue to be flown, and the use of uncertified motors promoted. There are certainly some responsible people flying what I call amateur rockets, and it might be nice to have them involved in NAR activities. However, there are some equally irresponsible people doing some incredibly stupid things that are bound to cause an accident. What sort of impressions have the discussions and activities created within the Board?

The vast majority of the trustees, in my opinion, have

no strong feelings in the matter. They view the activity as a minor part of the hobby spectrum. They're concerned over the safety issues, and will probably base most of their policy decisions on the outcome of our safety study.

The rest of the Board is split into two camps. The first group sees high power rocketry as a possible adult retention tool. They want to standardize all government regulations, regardless of what agency, and have them adopt the same definition for a model rocket and model rocket motor. The final group, of which I am a member, is nervous about the inclusion of high power activities within the NAR and within the NAR supported regulatory environment.

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Aside from the safety issue, the key factor for me is the viability of the high power market. Is the "market" big enough to matter, or is it too limited to have a substantial impact on the NAR membership and the long term potential of the organization? The activity takes a large flying field, has a small, little known set of manufacturers with currently limited distribution capabilities, and is considerably more expensive than model rocketry.

I'm generally unimpressed with the administrative capabilities of the people involved in this activity.

ISSUES OF HIGHPOWER-- ONE TRUSTEE'S VIEWS

They can organize but a single event a year. Their publications are spotty, and concentrate on the "gee-whiz-isn't-this-neat" aspects. I'm still looking for the supposed technical achievements possible with higher power engines, or the Mach 2 flights that are possible.

I spent a weekend discussing these issues and the NAR's position with these folks, and got a cordial reception. But since then, there's been no follow up. I find that amazing. If you were on the "outside" of the NAR's political structure, and had an "in" to the decision making body, wouldn't you use every one you had? Aside from some spotty phone calls to Pat Miller, the high power community has not taken advantage of its opportunities to plead its case. The distinct impression is that the average high power person doesn't see any benefit to the NAR's involvement in their activities, isn't interested in "unification" of the two groups, and isn't demanding NAR services.

When you're involved in an organization with few resources, you have to be careful to select the most important and meaningful activities to work on. We trustees should direct your money, volunteer time and most importantly, our people at problems and issues that affect the greatest number of current and potential NAR members.

When you look at the total picture of high power activities you see safety

questions, a small number of people, an activity needing specialized resources, and a group with little administrative talent. If you think the future of the Association lies in increased revenues, a better retention rate and membership levels above 5,000, the rational NAR manager must seriously question the wisdom of pursuing the high power market.

GETTING STARTED IN BOOST GLIDE.

IT AIN'T AS HARD AS IT LOOKS

like so: \-----. Again, do so gently, and in small amounts. Both these adjustment alter the stab's lift, and so affect the see-saw's balance.

If your glider isn't tissue covered, breathe on the wood before you try bending it. Moistened wood will bend much better. If you did tissue cover the model, you can skip this step and start bending to your heart's content.

Assuming you've stopped the diving or stalling, you may be left with some other problems. If the glider wants to turn sharply one way or another, you must find some way to hold the wing on the inside of the turn up. Again, follow the example of full sized airplane, and warp the wing.

Let's say you have a sharp turn to the left. The left wing will be on the inside of the turn. If you bend the trailing edge of the left wing down, more lift will be created on the left wing. The wing will be held up by the additional lift, and the turn

will flatten out. bending down of the trailing edge is called "washin".

If you want more to decrease the washin, or bend the trailing edge of the wing up. This is called "washout". If the turn is so severe that washin or washout is not helping, look for a rudder misalignment. Rudder misalignment is super for starting and sustaining spiral dives. If a glider "expert" tells you to bend the rudder to induce a turn, forget it. The "expert" doesn't know which end of the model is up.

A far better way to induce a good, gentle turn into a BG or RG is to use stab tilt. The next time you build a BG, try putting on the stab so one tip is 1/16-1/8" higher than the other. This construction misalignment vectors the stab lift out toward one side, and the model turns as a result. Gliders will turn towards the higher tip of the stab (e.g., right tip higher than left results in a right turn).

If you can find a model airplane hand launched glider (HLG) flyer around you, you're in luck. The principles outlined here are the basics of HLG trimming. Model airplane guys have been at it for 40+ years, so tap in on their experience. Try experimenting with an older glider, too. Unless you try this stuff, you'll never incorporate it into your glider flying.

We'd like to hear from you about other topics to cover in this series. We're thinking about tissue covering, wood selection, thermal hunting, and advanced design formulas. Let us know what'd you'e like, and until then, fly REAL gliders!!! Happy thermals!

MIDCON-84



According to all reports, this year's MIDCON was not as good as last year's. Unfortunately, the convention was hamstrung by the last minute loss of a number of speakers, including our own Bunny. This made the convention schedule a little light. Be that as it may, there were some good talks given.

Saturday morning started with Vince Bonkowski's talk on Static Spacemodeling and Fantasy Spacemodeling. Vince has been quite active the last few years promoting these two activities in the NAR. The man is a great modeler. The models he had as examples of his art were superb. Several large and highly detailed spaceships were good enough to be in the movies (Return of the Midcon? NAHHHH!). Vince's secrets? Time, patience and a stock of cheap plastic models for material.



Gary Flatt answers a few questions after his talk.



Two conventioners check out the outsized HPR Polaris and Mark

Gary Flatt gave a talk on Model Rocket Electronics. It dealt slightly with launch systems but was primarily concerned with telemetry. Several circuit diagrams were shown. Gary also displayed a transmitter he is currently working on. The most interesting part was discussion concerning the use of the LM1871 and 72 radio control chips for telemetry. This idea, unfortunately, is much talked about and not much else!

Sam and Joe Phillips gave several talks on high (eg. non-model rocket) powered rocketry. I'm not a big fan of HPR, but Sam and Joe have a pleasant presentation style that makes them watchable. I even picked up a few good ideas.

MIDCON-84 was history by noon Sunday and ended with an awards presentation. Donated prizes were given for most club attendance (won by SNOAR with more than 6 members) and a patently rigged photo contest (Sour grapes, Gaff! - Bunny). While this was not the best convention I've ever attended, I can say that I did basically enjoy it and it holds promise for the future.



Part of Gary Flatt's electronic rocketry group.



Vince with some of his impressive static models.

OF JEDI I HAVE KNOWN

by Bunny

While each NARAM has its own flavor, and every one is fun, we shouldn't forget the primary reason we have NARAM's. It's to anoint new Jedi Knights. And while each NARAM anoints new Jedi, and all are worthy holders of that title, a few particular Jedi stand out in my mind.

My Jedi Master, from whom I learned the craft of competition flying was Terry Lee, and his first National Championship came in 1974 at Manassas. Terry's models were never the prettiest on the field. Many a competitor will tell you how sorry he was when he dismissed the General on appearances. Terry never lost models, either. My old teammate, Rob Justis, claimed Terry could fly. He would walk into the woods, wait until no one was looking, then fly over the trees, arms flapping I assumed, until he found and retrieved the model. "Ah hate to lose models, Bunny Rabbit."

At NARAM-16, Steve Berhends won the A Division Championship, then won three B Division titles in a row before retiring to the University of Rochester. I couldn't believe the hippie in the grubby T-shirt could be the master modeler I'd heard so much about. A few more years of active flying convinced me I'd nearly run into another "appearance" trap. Say what you will about the man's hygiene or his NAR politics, but there was no denying he could fly rockets with control over the Force.

Trip Barber, Chris Flanigan, Guppy and Bob Parks formed the Barber Team, and proceeded to make a permanent mark in model rocket technology. Trip studied model rocket motor technology and coordinated the team's

efforts. Chris Flanigan flew most of the duration events. Guppy flew BG's and became the Guru of RC BG. Bob Parks flew both RC stuff and craftsmanship events. The interesting thing about the "MIT Boys", as they were known, was their nonchalance about sharing ideas and technology. They taught me about BG stability, trimming, tissue, and countless other technical innovations. I'll never forget that quality, a set of Jedi lending others a helping hand.

Let's move forward to NARAM-20. There Phil Barnes captured the C division title with a NARAM performance few would even dream about. He placed in 10 events and won about 8 of those. It didn't matter who was contending in an event, or how good the performance was. Phil simply bested them in a quiet, but deadly, fashion. Two years later he would become a World Champion in SD, and in five years, a World Champion in RC RG.

"Uncle Al" Neinast came from the quiet countryside of Wisconsin. This former fly-rod and furniture maker applied those carefully honed craftsmanship skill to model rockets. The result was a set of models at the forefront of lightness, and reliability. Al would not only lead his club to a Section title, but would repeat his individual championship on the same field four years later. Al personifies sportsmanship. He's always smiling at the end of a meet, win or lose, and never has a cross word for opponents or judges. Rumor has Al constructing his own workshop in Tomah, so we haven't heard the last of this quiet Jedi yet.

George Riebesehl, standard Estes model hooked on competition finished second by about points in his competition season. He proceeded to dominate the division for two years. His modeling skills were exceptional, and his flying efforts the equal of General Lee. I knew my competition skills were shot when he build an RG, his second attempt at the event, that was lighter than my NARAM model. I think it's quite fitting he is the first modeler called "Jedi".

NARAM-24 again brought a youngster to the fore because of his superior modeling talents. Kevin Kucek came into Orlando in fifth place. When he flew a Midwest regional meet that year, his Saturn V plastic model drifted toward a parking lot, but landed on an island of grass about 1'x3'. I knew then he controlled the Force. He left NARAM a Jedi Knight, conquering both the Florida swamps and his A Division competition.

Last year, it was another spectacular show for NIRA members. At the club meeting before leaving for Houston, Mark Schmitt came up to me and said "I'm going to be a Jedi." I didn't believe him, but I didn't want to discourage him either. I told him to work hard and get ready. When he won R&D over three B division competitors, I knew his control over the Force had arrived. A 3,500 point NARAM resulted, a Jedi he became, and a tale for competition modroc historians was written.

Who will be Jedi this year? I've seen some pretty crazy stuff go on in this galaxy of model rocket competitions, so I won't make any predictions. But look

TRANSITION

a Parachute and Streamer Duration model designed, built and flown by Craig Beyers, Annapolis, MD

Craig Beyers won International SD at NARAM-23 with three maxes, the only contestant to do so. At first glance, the winning model isn't anything to write home about, but closer examination shows an interesting method of attaching the external shock cord that makes for a novel way to reduce drag as well.

About 20" of 30# squid line is attached to the RB-50 engine mount. The mount is inserted $\frac{1}{2}$ " into the main body of RB-52, then the joint is sealed with Hobbypoxy Filler and sanded smooth.

The fins are $\frac{1}{16}$ " balsa airfoiled and finished with the same Hobbypoxy Filler. The model was painted with Krylon orange red.

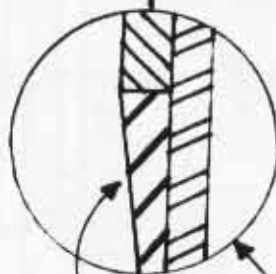
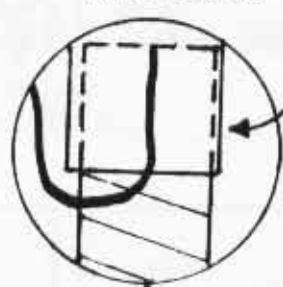
For recovery, Craig used a 4x40 Sykos streamer of light yellow tracing paper. If PD is your game, he recommends either a $\frac{1}{2}$ mil dry cleaner or mylar chute, 18" in diameter, with 24" shroud lines. Power your finished "Transition" with a $\frac{1}{2}$ A3-4t and fly from a tower.

PARTS LIST

7 $\frac{1}{4}$ " RB-52 tubing
2" RB-50 tubing
 $\frac{1}{16}$ " soft balsa
NC-52P plastic nose cone
30# squid line
 $\frac{1}{8}$ " engine block
4x40 tracing paper streamer
Hot Stuff
Titebond
Hobbypoxy Filler
spray paint

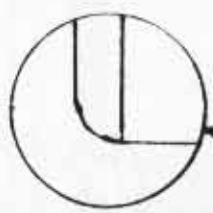
NC-52P with coupler reversed and slit for squid line to pass into body.

RB-50 is slit, squid line is tucked in, knotted and Hot Stuffed into place. RB-50 is Hot Stuffed to RB-52.

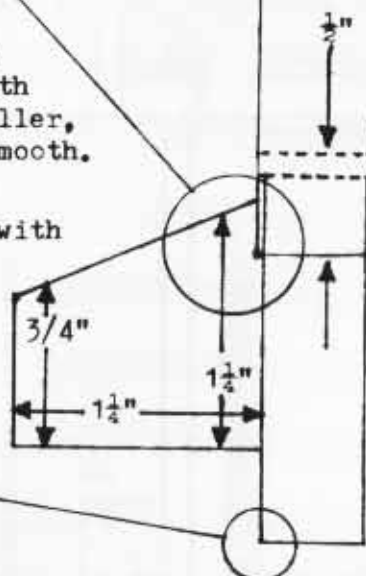


Tube seam is filled in with Hobbypoxy filler, and sanded smooth.

Attach fins with Hot Stuff; Titebond fillets.



Round rear edge of RB-50.



7 $\frac{1}{4}$ "
RB-52

2"
RB-50

THE WORLD OF "COOK COUNTY"

Thus, with the possibility of national championship within grasp, quick action was clearly in order. Action which NAR history would call "The Great Cook County PULSAR Massacre."

It would be a NARAM to remember....

Boldly the mighty PULSAR slaughterers set forth...

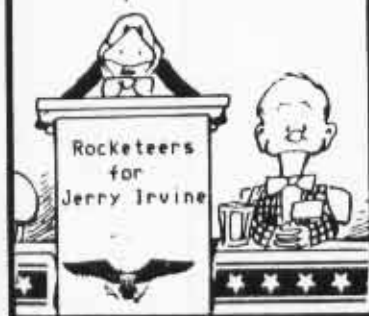


Boldly the mighty PULSAR slaughterers set forth...

DON'T RUSH US.

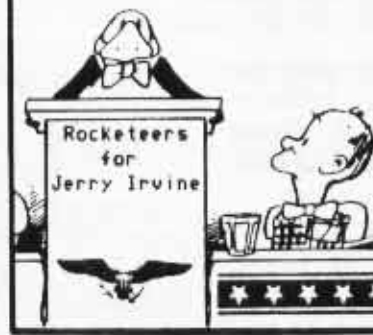


AND IF ELECTED... I SOLEMNLY PLEDGE TO...UH...TO...

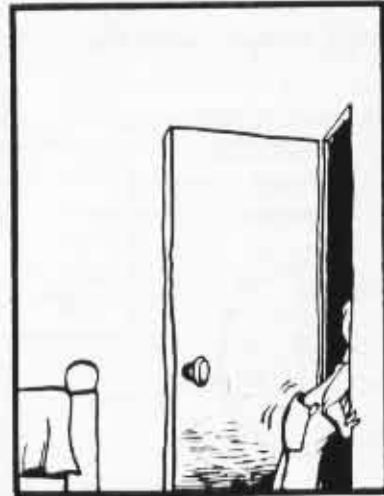


SAY...WHAT IS IT THAT YOU FOLKS WOULD LIKE TO HEAR ME SOLEMNLY PLEDGE?

To have Mr. Irvine head the Blue Ribbon Commission on High Power Rocketry.



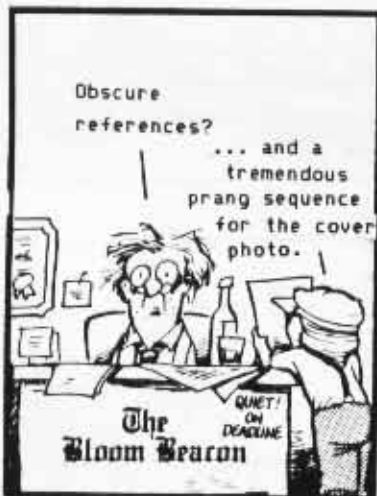
ARE YOU PULLING MY LEG? NEXT CANDIDATE!



One's closet of anxieties isn't complete without LDRS.



THE WORLD OF COOK COUNTY

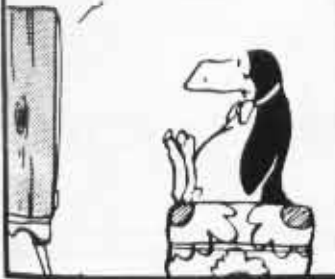


JEDI...

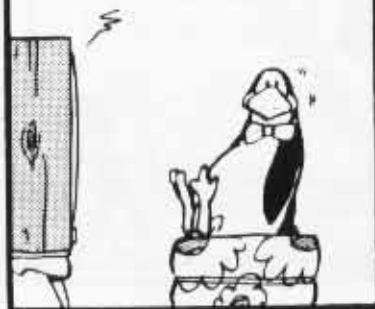
around you here in Center Valley. Watch for those guys who always seem to catch a thermal, get a track to close when no one else can, and who never fail to return those flights that have to come back. Before you pass it off to luck, listen carefully for the voice of Obi-Wan. And may the Force be with you.

THE WORLD OF "COOK COUNTY"

Good evening. John Pursley here for American Spacemodeling. This issue's top stories: Estes Industries lowers prices; brings back free kits.

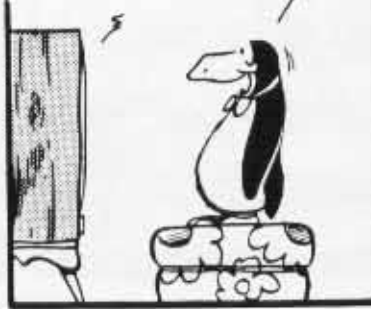


Overseas: Bulgarians admit cheating at last World Champs. Return all trophies to US Team.



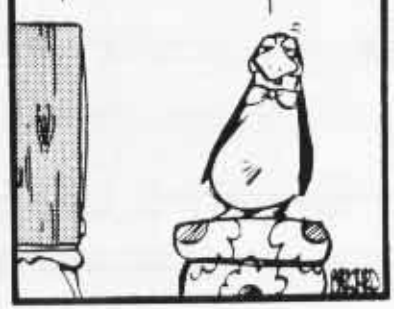
And just in, the NAR Trustees petition FAA for a 10 pound weight limit.

REALLY?



HA HA... NO.

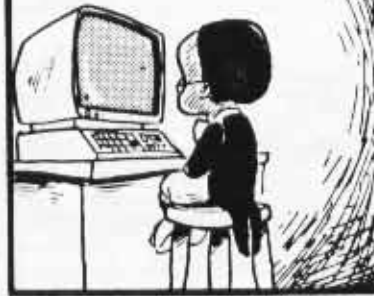
I WASN'T GOING TO BUY THAT LAST ONE.



The Great Maestro once again sits before his instrument... preparing for his greatest challenge: The Contest Board Computer Points File... First, a wild guess at the password... TIC TIC



PING!
CLICK...CLICK!
TIC...PING!



Password "Crepeiscrap" approved. Proceed.



Beating PULSAR is simple, if you have the right equipment.



Bullet, you're in big trouble! The FBI called again and said you've been breaking into the main flight computer at NASA.



Said you programmed the next shuttle to land in PULSAR's launch field. Now Bullet, I've told you over and over that...uh...that

THAT...UH... THAT...



HEE! HEE! HEE! ACTUALLY, THAT'S A PRETTY GOOD ONE, SON...

YEAH!



BUT YOU'RE STILL IN BIG TROUBLE!!





NIRA Membership Application and Leading Edge Subscription

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GLEN ELLYN TOY AND CARD SHOP

(Sorry, too busy building FOR NARAM TO BE FUNNY, R.G.)

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