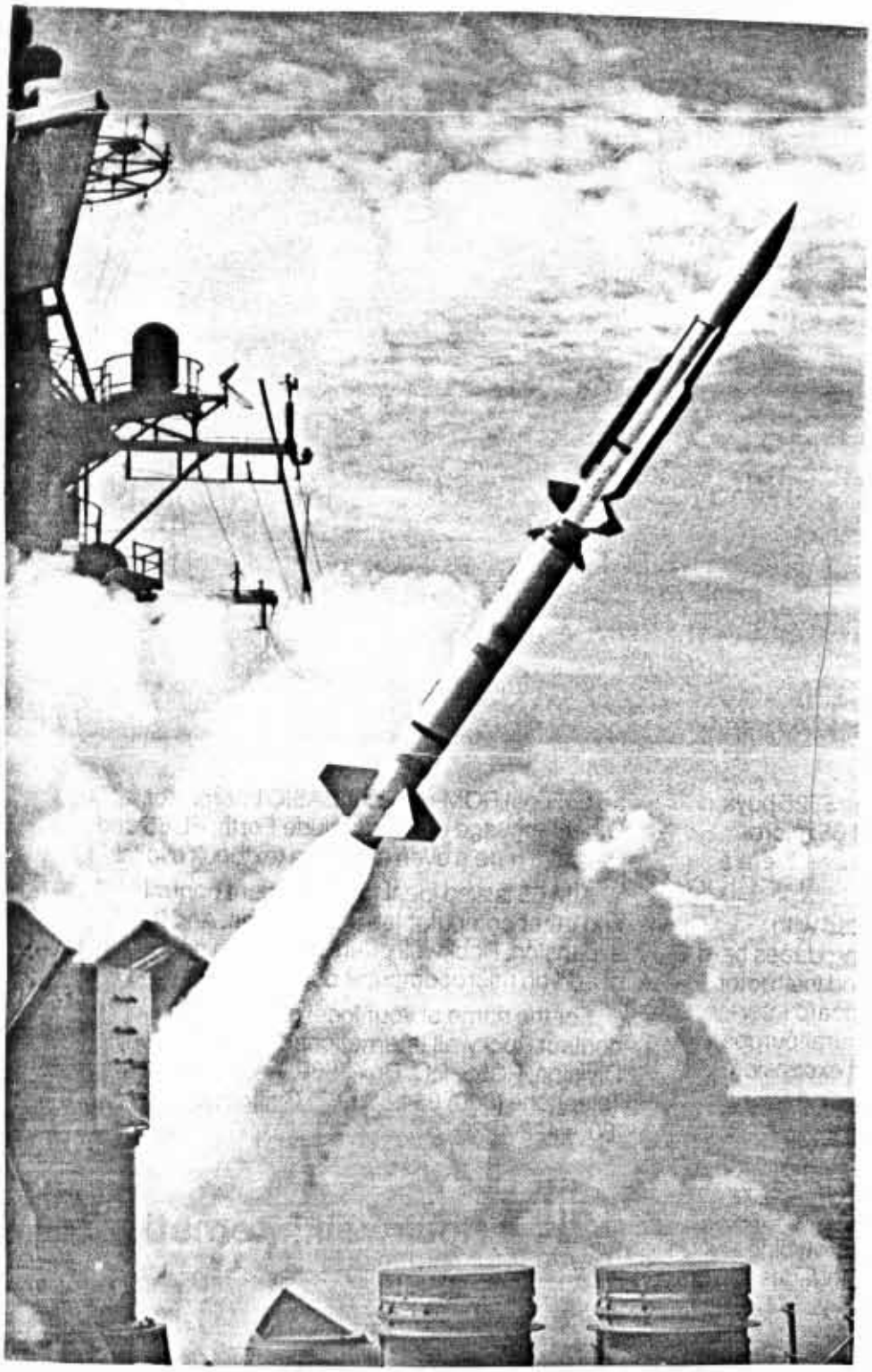
THE LEADING EDGE

VOL.5 NO.1
JAN/FEB.82



IN THIS ISSUE

T minus ONE

MONTHLY NIRA MEETING January 8

Glen Ellyn Civic Center 7:30 PM

NOTE CHANGE IN DATE!!! Election of the 1982 officers will be held. You may also vote by mail.

MONTHLY NIRA MEETING February 5

Glen Ellyn Civic Center 7:30 PM

Swap shop will be held. Bring old models, kits, engines, etc. to trade or sell.

KENTCON MODROC CONVENTION March 5-7 (?)

Kent State University

A weekend of rocket related workshops, manufacturers' displays and contests. Contact Bunny or Bob Kaplow for details. The dates are subject to change.

FINAL 1980-81 NIRA STANDINGS

A secret source provided the Leading Edge with the final NAR point standings, sorted from first to last! NIRA came out OK, all things considered. Final standings by age division were:

A Division:

1.	Pat Peterson	4,056 pts.
10.	Mark Schmitt	944 pts.
25.	Larry London	230 pts.

B Division:

1.	George Riebesehl, Jr.	3,472 pts.

C Division:

5.	Mark B. Bundick	1,503 pts.
9.	George Riebesehl, Sr.	1,182 pts.
10.	Ric Gaff	1,172 pts.
17.	Bob Kaplow	733 pts.
25.	Tom Pastrick	615 pts.
88.	Braxton Miller	102 pts.

Sections:

2.	NIRA	13,488 pts.

Nice job, NIRA-ites!

THE FIRST WORD

RIC GAFF

Happy New Year to you all, and welcome to this, our fourth year of publication. I want to thank all the people who work together to make this newsletter possible. Mark Bundick, who supplies material and also does all the typing; "Jedi" George Riebesehl; Bullet Bob Kaplow; Pat Peterson, Walt Schalk, Jr. and Larry London, all contributed articles, plans and ideas. Don't go dry on me, guys. A special thanks goes to Tom Pastrick for hours in the darkroom doing custom halftones for the past three issues, and adding greatly to the Leading Edge's picture quality.

We've got a good crew here at TLE, making ours one of the better newsletters, in my admittedly biased opinion. But we're going to try and make it even better. We need help from the rest of you NIRA members. I've had several people come up to me at meetings and launches saying "I've got plans for this great model." I never see them! If you have plans or articles, I'm at every meeting or launch, so you're out of excuses. Get that material to me today!

Part Two, or "Just the facts, Chris."

I've just seen the Estes Fall Catalog of sale items and the Fall '81 issue of Model Rocket News. An item worthy of comment appears on pages 26 and 27. A NARAM-23 report written by Chris Pearson of SNOAR takes up those pages. It's a reasonably accurate thumbnail account of the contest with one irritating exception. I quote from the article, ". . . while Reserve Championship was awarded to the Wheaton Association of Rocketry." WRONG, WRONG, WRONG!!! as anyone who was there should know. This "little thing" really hacks me off as it should for all those NIRA members who busted a gut trying for the National Championship.

Let's get the facts straight, shall we, Chris?

BELLS FOR BOB

All NIRA members offer hearty congratulations to Bob Kaplow and Judy Sender who plan to "tie the knot" in February. And don't worry. Bullet will still be a fixture on the NIRA range. Judy can probably look forward to recruitment as a concession stand/ information booth operator at the annual Labor Day launch. Again, congratulations from the club.

MODEL OF THE MONTH WINNERS

The November Model of the Month winner is Walt Schalk, Jr. with his flying "Coffee Pot" oddroc.

Congratulations, Walt!

The December Model of the Month winner is Ric Gaff (finally!) with his sport scale Talos.

Congratulations, Ric!

THE LEADING EDGE

is published bimonthly by and for members of the Northern Illinois Rocketry Association (NIRA), NAR Section #117, and is dedicated to the idea that Model Rocketry is FUN! Suggestions for articles and plans are welcome. Articles, plans, other newsletters and news items of interest should be sent to the editor:

Ric Gaff
331 Third Street
Northfield, Illinois 60093

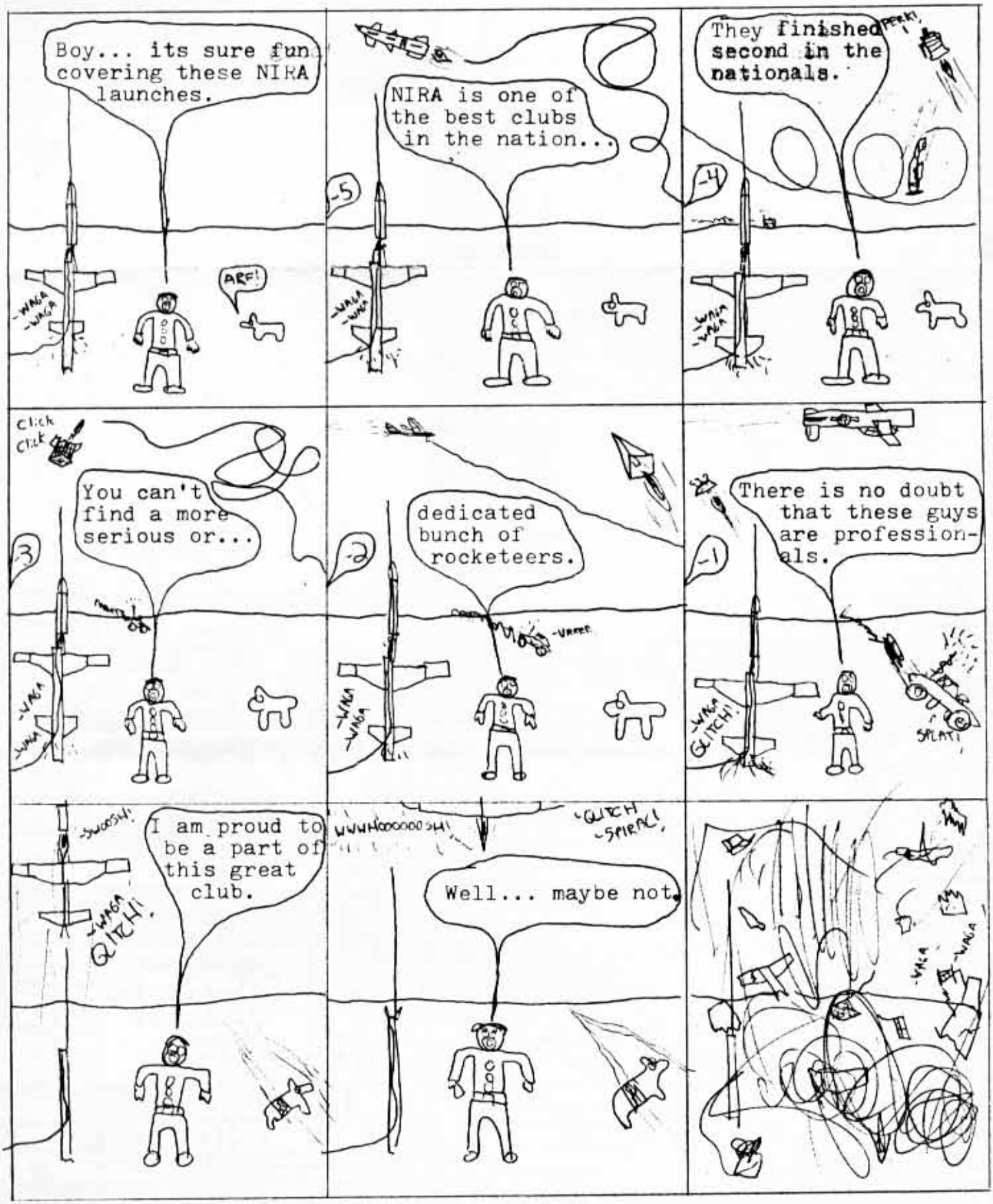
JAN./FEB. 1982
VOL.5 NO.1

CONTRIBUTORS

-"JEDI" GEORGE RIEBESEHL
-MARK BUNDICK
-TOM PASTRICK
-RIC GAFF

MR. BILL...

GOES TO THE NIRA LAUNCH.

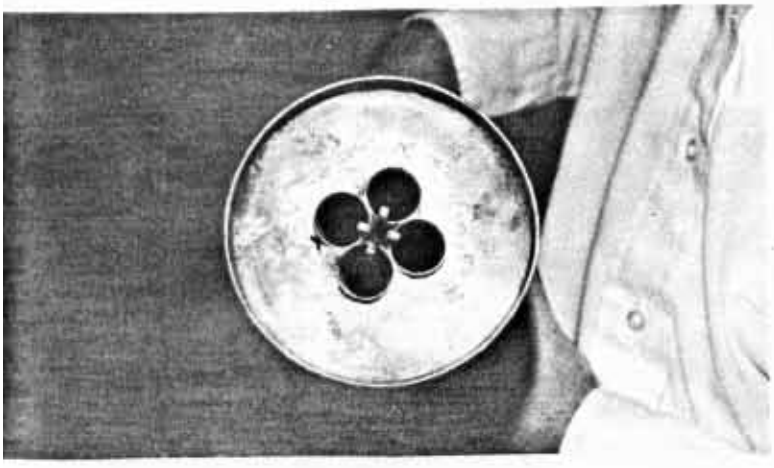


THIS OLD ROCKET

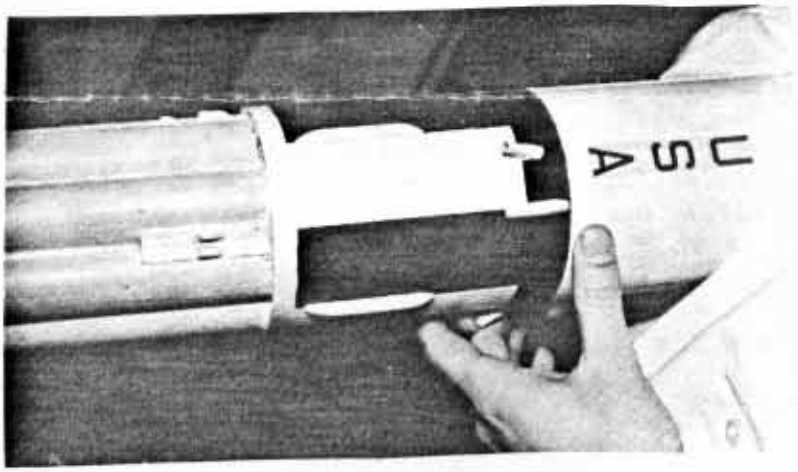
BRING NEW LIFE TO JUNKY OLD ROCKETS

The Saturn I-B had seen better days. I started the renovation with an overview of the model's strong and weak points. The escape tower tube was broken and the tower's framework cracked. Grain showed through in places, and the paper wrapper was yellowed. The SIV-B/Service Module shroud was in good shape. At 5" long and 3" in diameter, I was glad I didn't have to replace it. The Estes paper wrapper used to show corregations didn't make them stand out enough, though. The first stage fuel tanks had yellowed decals, and ugly glue fillets between them. Three fins were missing, and some of the ones remaining were cracked. The farings at the bottom of the tanks looked OK.

After this overview, I thought some sanding to help improve the finish, replacement of the fins and a complete Apollo capsule rebuild were needed. This was the minimum needed to restore the grand old bird. I also thought about adding some nozzles and enhancing those corregations. These features would help the model become a contender in Sport Scale.



Rear of Saturn showing blast and exhaust damage. This area will require quite a bit of sanding and refinishing.



Antenna plate detail shows some worn balsa parts. These were replaced with stronger spruce fittings that have less grain.

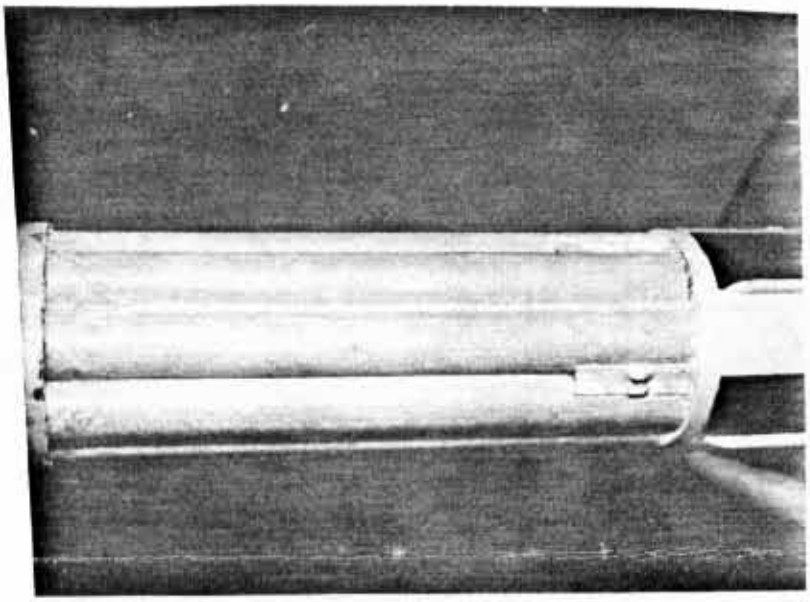
Before you do anything to a model to restore it, run through an overview to help plan your work. Then take measurements, lots of them. I measured the size and location of all decals. I'd have to know where to put the new ones. I measured all the fins. I took measurements of the escape tower, antenna boards and first stage tank farings. Write down all these measurements on a single sheet of paper, and keep them available for reference.

Now I could begin to remove all the parts I intended to replace. I cut off the escape tower, took my necessary measurements and trashed the remains. I would reconstruct the tower from 1/16" dia. dowels, available at hobby shops. I also made a template of the capsule's shape. I would carve a replacement from a TA-6070 adapter I had on hand. I would also roll a replacement tube from bond paper.

→

The fins came off next. My first unexpected problem came up here. Those first stage tank farings that were in such good shape came off with the fins. The fins had been heavily filleted, and there just wasn't any way to remove the fins without the farings coming off, too. I managed to save two farings for patterns.

I removed the yellow decals next. When sanding and dope thinner didn't work so well, I turned to commercial paint thinner. It did the trick just fine. I also removed all the paint from the first stage tanks, along with part of the fillets between the tanks. This stuff was incredibly caustic; I used goggles and extreme care when I applied and removed it. The glue fillet removal was an unexpected bonus, but it created a new problems. The gaps between the tanks looked horrible. I filled them with "Plastic Wood", a filler available at hardware stores.



Gaps between first stage tanks were filled with "Plastic Wood", a filler available at hardware stores.

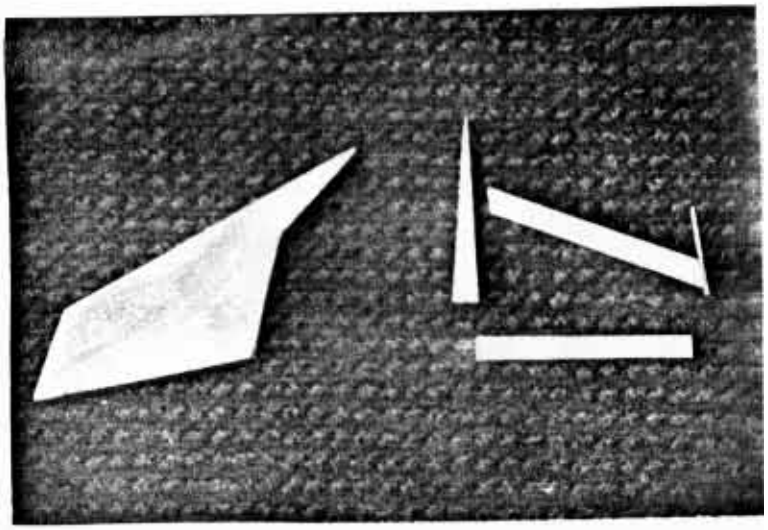
Fins were next. I could have used ¼" balsa like the original fins, but it's hard to sand balsa to a sharp edge. So I cut the fin root and tip cross sections from 1/32" plywood, joined them with a balsa spar, and put in a 1/32" ply trailing edge that was the proper ¼" wide. This frame was covered with 1/64" plywood. Viola! I had a strong, light fin with perfectly sharp, square edges. It took a while to make eight fins, but the results were worth it.

To replace those tank farings, I used cardboard from a legal pad. It's fairly stiff, but will curve enough to fit the tanks. I cut a piece using the old faring for a pattern, then test fitted the section into place. I kept trying different patterns until I was satisfied with the fit. I cut seven more farings, then started gluing them into place. I used Titebond to help fill the gaps, but was careful <u>not</u> to leave heavy fillets.

At this stage, I was ready to attach the fins. I had numerous details to worry about, and I had yet to start on the corregations. But I was quite optimistic about the progress so far. For your restorations, this article should provide some food for thought. Look around the workshop or hardware store for new materials. Would you have thought of commercial paint remover or Plastic Wood for your model? There's nothing that says everything you use on models has to come from the hobby store. Keep your eyes open, and your brain thinking.

Next issue, we'll tackle the corregations, small details and begin finishing "This Old Rocket"

BUNNY VILLA



Fin construction details. Shown are the fin root, tip, trailing edge and spar along with a completed fin.

CHAD DIGITAL RC

It used to be that flying a radio controlled boost glider (RC BG) was an experience limited to a few wealthy rocketeers. But this is no more. The constantly shrinking price of the needed electronics combined with a little creativity has made radio controlled boost gliders a realistic possibility for many rocketeers. This article explains how I went about flying RC BG's. Some "experts" might not agree with the methods I used. It is a bit "CHAD", but it works and it is relatively inexpensive.

The Radio Gear

The most common gear used in RC BG's is the Cannon "super mini" or "micro" system. It is the smallest and also the most expensive at about $200. If you can afford to spend that, you don't have to bother reading the rest of this article. Most people can't, and that has been a big barrier to flying RC.

Don't despair. There is a cheaper way. Tower Hobbies, a large RC wholesaler, sells a two channel radio control system for $74.98. At first, you might think it is too heavy for an RC BG. With slight modifications, you can make the Cox system into a small, lightweight RC system for your RC BG.

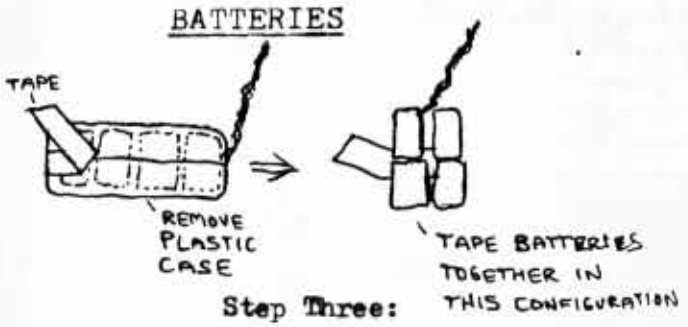
Modifications

Step One:

Order a Cox 8120 RC system from Tower. STOP! Before you go and make the modifications to the system for your RC BG, you might want to learn how to fly RC. If you've never flown RC before, an RC BG is definitely not the way to learn. Things happen too fast. What good is an inexpensive radio controlled BG if you control it into the middle of a softball game? Again, don't despair. Tower Hobbies also sells a beginner's sailplane. This is a large model airplane glider of about six foot wingspan. You can toss the Cox radio in "as is" and fly. You've probably seen these models at a NIRA launch. Sailplanes cost about $20, plus some additional for an iron-on covering. There's extensive building to these models, so they're a good winter project. If your budget is really tight, or you have total control of the Force, you can skip this step and move directly to RC BG's. One word of advice: This usually doesn't work.

Step Two:

The huge dry cell battery pack is the heaviest part of the Cox system. You need to replace it with rechargeable "ni-cad" betteries. Ace RC sells a lightweight pack for $14. With a $6 "uni-charger", you can charge the pack over and over; this is cheaper than dry cells in the long run. Take the plastic case off the Ace battery and arrange the cells as shown. They will now fit into the fuselage of an RC BG.



Step Three:

The Cox servos are also too heavy. Ace RC has smaller servos at a reasonable cost. You'll need two "micro" servos at $33 each assembled. If you have some experience building electronics kits, you can build them yourself, and save $5 each.

Step Four:

Remove the plastic case from the Cox receiver. It comes off when four small screws are removed. The receiver looks fragile with all the electrical jelly beans sticking out in the breeze. I've found it to be quite durable without the ½ ounce case. Find the three sets of pins sticking up. These were the connecting points for the batteries and servos. The blue Cox connectors aren't very good. Since you've gotten all this Ace stuff, you might as well put in Ace's Deans connectors so things match up with your micro servos. You'll need two sets of three pin connectors for the servos and one two pin model for the batteries. Solder the female pins to the servos and battery. Cover the joints with heat shrink tubing. The male pins must be soldered to the receiver.

→

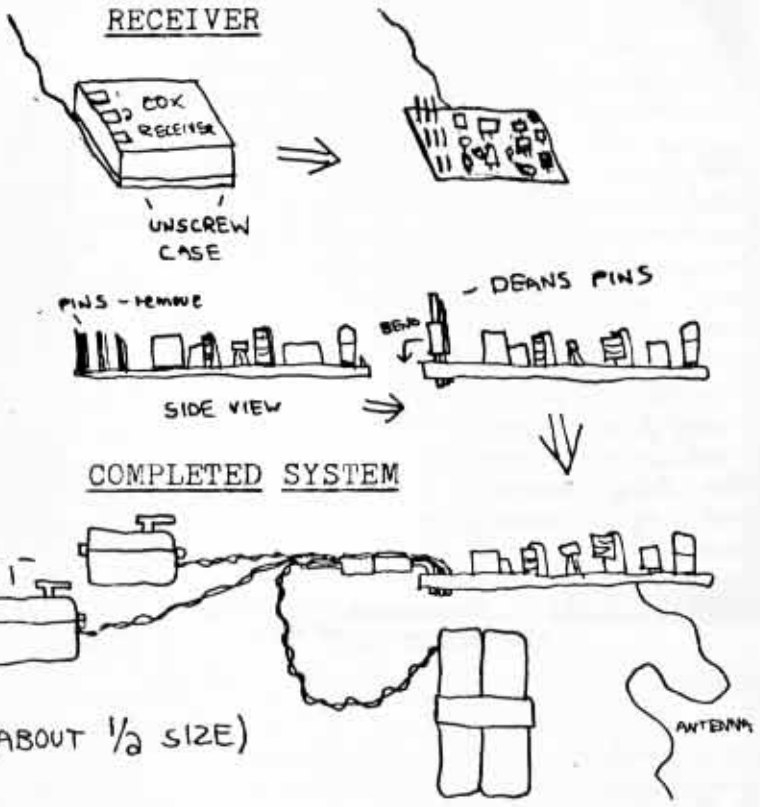
Unsolder the Cox pins. The Deans pins fit almost exactly into the holes. Push the pins into the holes until they just poke through the bottom of the board. Solder into place, then carefully bend the connectors 90 degrees down. They should now lay flat. See drawing for details.

Step Five:

You'll still have to buy eight "AA" batteries for the transmitter, but you should be just about ready to plug everything together. You'll have the two Cox servos to use in another RC project or you could sell them. Tower Hobbies has several two channel radios which could possibly be converted. You're on your own if you want to try.

Flying:

A Flagship, designed by Bob Parks, with a fixed pod and D12's is the best way to start. More people have flown this RC HG than any other, and plans will appear in the Model Rocketeer this spring. I now have a total of 22 flights on my radio gear with no problems. If you have any questions, just write. I'll try to help. Let's see more NIRA members flying RC HG in the spring!



JEDI GEORGE

Addresses and Needed Parts List

Tower Hobbies
P. O. Box 778
Champaign, IL 61820

Order 1 - SAN88524 Cox R/C $74.95

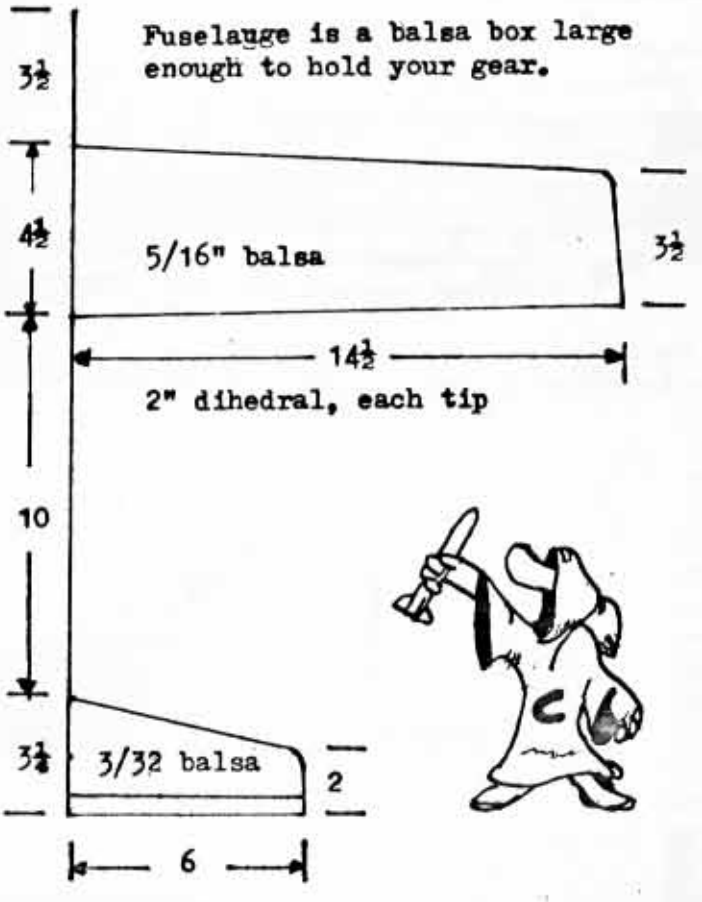
Ace R/C
Box 511
116 West 19th Street
Higginsville, MO 64037

Order 2— 14G20M Servos (kit) $27.95
or 2 - 14G20MC (assembled) $32.95
1 - 38K42F Battery $13.95
1 - 34K35 Charger $ 5.98

For advice and answers:

George Riebesehl
Mertz 809
1125 W. Loyola Avenue
Chicago, IL 60626

BASIC "FLAGSHIP" DIMENSIONS



OUTER LIMITS

WE CONTROL THE HORIZONTAL
WE CONTROL THE VERTICAL...USUALLY

ADVENTURES OF A FREEFALL MOUSE

During the summer of '71, I was just getting started in this hobby. One of my friends decided he wanted to fly a mouse. At the time, flying creatures of one type or another was fairly common. Most people confined their activities to insects. It could be quite upsetting to prang a mouse. The mouse isn't too crazy about it, either. Unfortunately, Jeff wasn't satisfied by simplying stuffing a mouse into a payload model and recovering it in one piece. He was slightly more ambitious. He wanted to film the mouse in free-fall!!!

The basic idea was simple enough. After a model reached its peak and is falling to the ground, it will be in free-fall until the chute pops. At least in theory, anything in the payload section would experience a few seconds of weightless ness. To test the theory, Jeff built a payload section large enough for the mouse and a recently introduced Cineroc movie camera. Part of the payload section was clear plastic. Jeff Hoped this would admit enough light for the Cineroc. Photo One shows Jeff with His creation.

Frankly, the model was a "junkroc". The payload section was made from an old oatmeal box, and the rest of the model was just an old mailing tube. Let's face it. That Cineroc and pet mouse weren't cheap! Just ask GCH Inc. and Space Services. They cut corners, too. If it was good enough for the pros, why not model rocketry, too?

I was fortunate (?) enough to be there for the model's first and only flight. Forgot my movie camera, darn it!

Photo One: Jeff and "Junkroc"

The Cineroc was installed. The mouse was rather unceremoniously dropped into the oversized payload section. Three famous D13 engines were prepped and installed. With everything ready to go, the scene looked like a miniature Cape Canaveral. Everyone was quiet except the mouse. The half crazed creature was trying to dig its way out of the cardboard prison. It must have known something Jeff didn't.

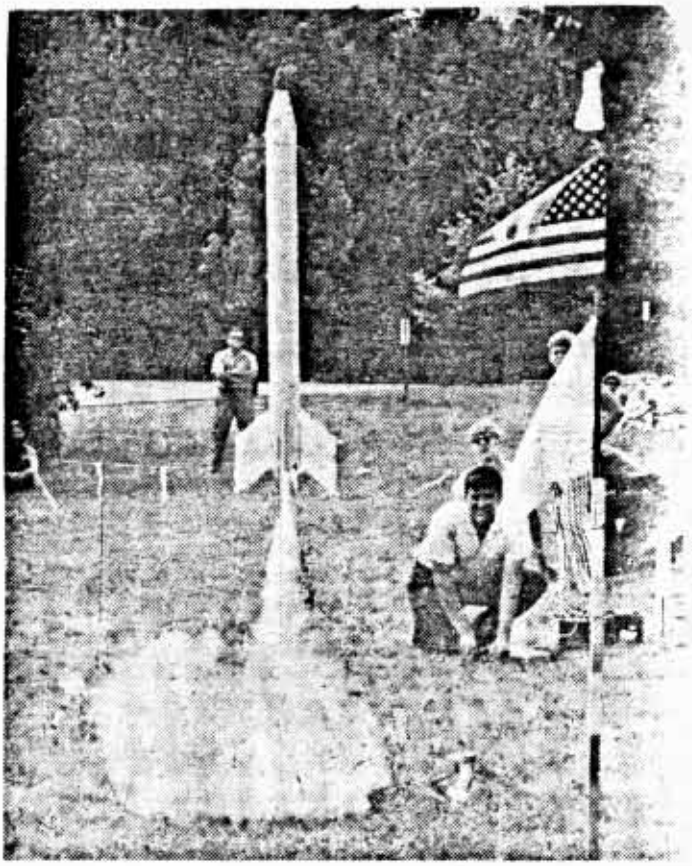
The countdown was given, and the firing button was pushed. The model roared into life. Well, wimpered would be more accurate. Only one engine of the cluster fired, and it catoed in typical D13 fashion.

→

The model then bent in two. The payload section broke up, and the poor mouse went spinning through the air. The little guy was so dazed, it didn't try to escape. It only wanted an airsick bag. Meanwhile, the catoed engine had ignited the remaining two engines backward, totally incinerating the model. The flight, while otherwise a disaster, did have two bright spots: an undamaged mouse and an undamaged Cineroc.

Most people rocketeers would have given up this madness after a flight like that, but not Jeff! He figured since his model was destroyed by a bad D13, it should be replaced by Estes. Estes was indeed having a bit of trouble with new motor. They solved their problem in the short run by being generous with replacement parts. I don't know what kind of story Jeff gave Estes, but he sure sold them a bill of goods. He got enough parts to build a second version shown in the drawing and Photo Two. This marvel of engineering was a six foot three stager built entirely of BT-101. The nosecone was rolled out of clear plastic, and each stage contained a D13.

The bird was impressive, amazing, stupendous and grossly underpowered. Its first and only three staged flight went off as a test with no mouse or Cineroc. The model rose slowly with first stage separation at four feet. The booster landed inches from the pad. During second stage burn, the model arced over barely clearing a 30 foot tall tree. Stage #2 landed in the tree top. The third stage shot the model toward the ground where it landed on its side, undamaged. The upper stage was flown successfully later that same day for the benefit of newspaper photographers. Hey! An early Maxi-Brute!.

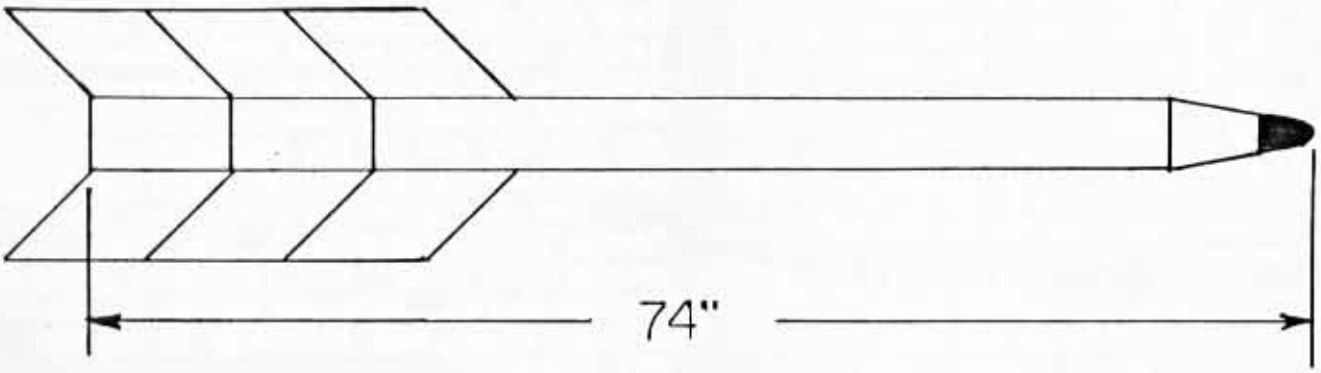


APOLLO IN MINIATURE — Lifting off flawlessly, as did Apollo 15 yesterday, is one of the creations of the Smoking Saturns Rocket Club at yesterday's Shoaff Park meet. The model rockets vied in altitude, flight duration, recovery system and recovery accuracy contests. The rocket shown, built by club member Jeff Slutsky, has just been fired by Richard Gaff.—Staff photo by Dailey Fogle.

After this attempt, Jeff found out about FSI and designed an F100 model. He never finished, and an ambitious and strange project came to an end after only three flights. Mice everywhere rejoiced.

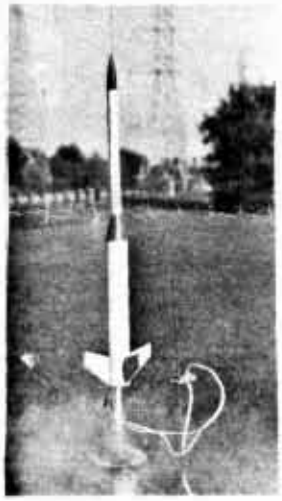
RIC GAFF

THE OUTER LIMITS will be a seris of articles examining the more unusual, even bizzare, ideas and concepts of model rocketry. Look for it!



TOPKAT

ESTES
MODEL ROCKETRY
SCIENTIFIC SPACE AGE HOBBY



1 – 3140 ENGINE HOLDER
2 – 2060 RINGS PLUS BT-20 TO MAKE ENGINE HOLDER

TOM PASTRICK

POWER FOR YOUR PAD

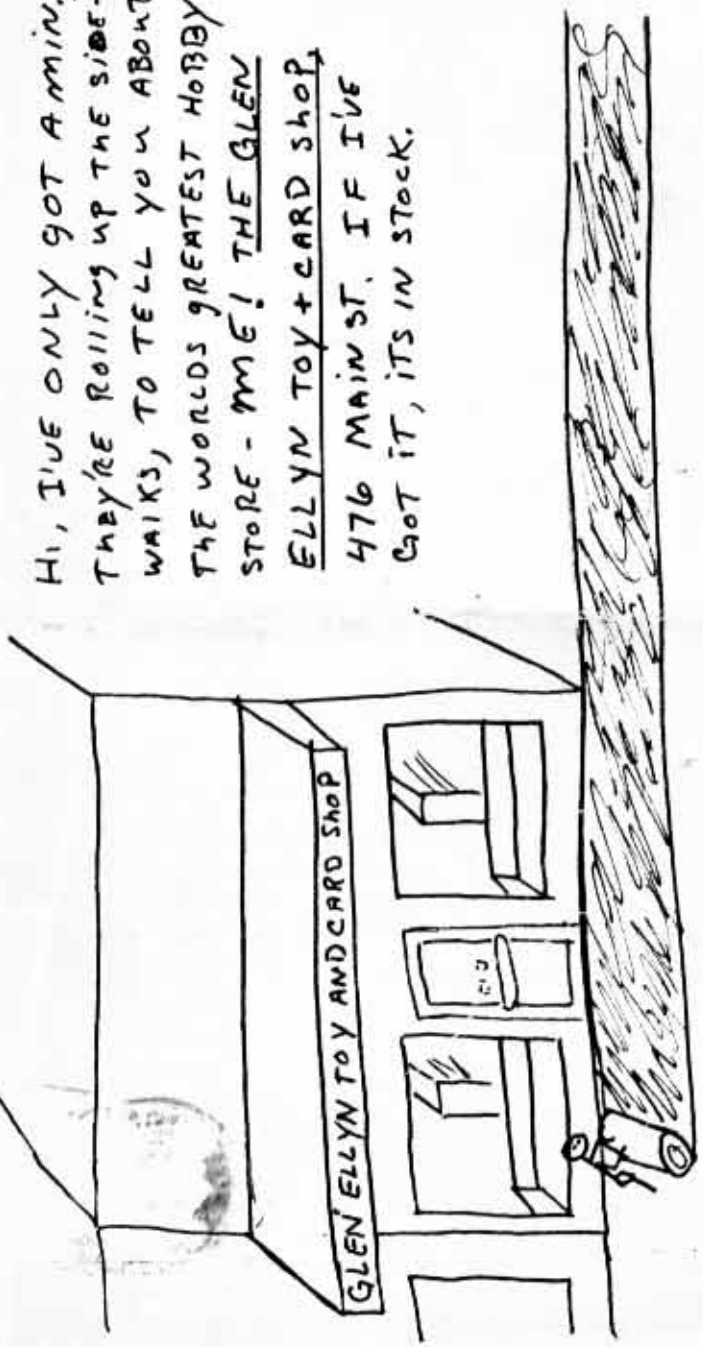
NIRA members looking for a source for "gel cell" batteries should write Poly Paks, Ind., Box 942S, Lynnfield, MA 01940. Their Model #6734 is a 12 volt, 4 AH cell priced at $16.80 plus about $3 for shipping. You'll have to rig up a charger for this gem, but remember Ric's gel cell ran for over two years without a recharge! Get rid of those misfires and non-launches!

NAR TRUSTEES TO MEET

The final meeting for the 1979-82 NAR Board of Trustees will be February 12-14, 1982, in Houston, Texas. The agenda will include reviews of committee reports, the annual budget, and a look at the Model Rocketeer's hobby shop distribution program. Midwest rocketeers wanting to bring items to the agenda should contact Bunny as soon as possible.

FLASH!!! INTERNATS NEWS

Howard Kuhn returned from the FAI meeting in Paris with word that there will be no World Spacemodeling Championship in 1982. Bulgaria and Poland both hope to submit bids for a 1983 Championship. Events for the next meet were selected, however. They are A PD, A SD, C HG, E RG, C Scale Altitude and Scale. It is highly likely a team selection flyoff will be held after NARAM-24.



Richard Gaff
331 3rd Street
Northfield, IL 60093

CHANGE OF ADDRES
KITS-MAKE YOUR
MOVE COMPLETE

NORTH SUBURBAN, IL
PM
DEC
1981

CHANGE OF ADDRES
KITS-MAKE
MOVE COM

John Hanson
President Continental Congress
USA 20c