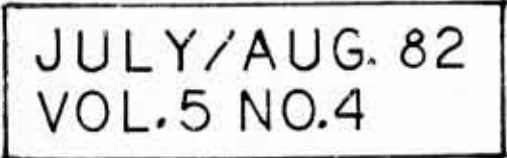




THE LEADING EDGE



JULY/AUG. 82
VOL. 5 NO. 4



T minus ONE

CONTEST CALENDAR

ETR-12

July 3-4, 1982
Bong Field, WS

Events: A Alt., C SR Alt., C PL.,
D EL Alt., A RG, B RG, C EG, F EG

Contact: Bob Kaplow
1628 Waterford Lane
Palatine, IL 60067
(312-934-1160)

MONTHLY NIRA MEETING July 2

Glen Ellyn Civic Center 7:30 PM
Results from MAR Regional; Final
planning for ETR Regional.

ETR-12 CONTEST July 3-4

Bong Field, WI See Contest Calander
or contact Bob Kaplow.

MONTHLY NIRA MEETING August 6

Glen Ellyn Civic Center 7:30 PM
Planning for 19th Annual Labor Day
Launch. Don't miss it!!!

NARAM # 24 August 9-14

Orlando, FL The "Nationals" !!!

MONTHLY NIRA LAUNCHES

Ackerman Park, Glen Ellyn
Contact Bunny (642-9028) or
Bullet Bob (934-1160) for exact
dates and time.

SHOOTING STAR 7

Sept. 3-4, 1982
Tomah, WS

Events: $\frac{1}{2}$ A IPD, $\frac{1}{2}$ A SD, $\frac{1}{2}$ A RG, A HD,
D EG, B PL, C EL Dur., DE, PM

Contact: Jim Zingler
324 West Milwaukee
Tomah, WS 54660

ANNUAL LABOR DAY LAUNCH

—A LITTLE REMINDER—

SEPTEMBER 6TH 2:00 PM

NEWTON PARK



MODEL OF THE MONTH WINNERS



The May Model of the Month winner is Tom Pastrick and his F-104 plastic conversion. Congratulations, Tom!



The June Model of the Month winner is Scott Schmitt and his Estes Phoenix. Congratulations, Scott!



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

Any material in the Leading Edge may be reprinted if proper credit is given.

CONTRIBUTORS

MARK BUNDICK
JEDI GEORGE
PAT PETERSON
RIC GAFF

APRIL NIRA LAUNCH

NIRA's second club launch of the season looked as if it would never materialize. Construction crews had torn up all of St. Charles Road near Ackerman Park. Walt Schalk renamed it "the Barma Road". Having passed through the puddles and bumps, we found the park jammed with Little Leaguers and soccer games. A launch site was finally found in the far west corner.

NIRA'ites appeared to fly conservatively, as most models were repeats from previous launches. Tom Pastrick had his usual assortment of models, from his always reliable Space Plane to a Nike Smoke. Tom also had an old RC design with a new covering, Micafilm. (No, not microfilm!) He claims Micafilm is several times stronger than Monokote, but lighter.

Tony Lentini bucked the conservative trend with a new and unproved oddroc, a flying toilet paper roll. It suffered the fate of many untested designs, an arched flight and a dust-scattering prang. Jedi George had a new RC Flagship, described by Bunny as "sexy". Its two flights were good, but I'm waiting for more spectacular stuff. Break out those P's, George!

Wayne Schalk's persistence finally paid off. After yet another unstable flight on his "Rubik's Cube", he finally put on the top Ric Gaff had suggested from the start. An impressive successful flight resulted. Larry London's RC got poor times on a $\frac{1}{2}$ A, but looked good on an A. His piston launched A Payloader flew high, despite being launched at an angle.

Other flights of the day included Scott Schmitt's Little John, Tom Eckles' Sprint, George Sr.'s B Beakers and Bunny's SPEV (Spare Parts Elimination Vehicle). The launch ended in the traditional fashion, with a bunch of NIRA members chasing down a Tom Pastrick model. See you at the next launch!

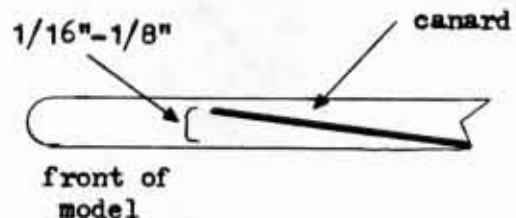
PAT. PETERSON


OOPS! WE GOOFED!!!

In the May/June issue, the March Model of the Month winner was incorrectly listed as Doug Hall. Ian Hall was the correct winner. Sorry about that! Congratulations, Ian!

B BEAKERS NOTE: CANARD ANGLE

The canard angle was omitted from the B Beakers plans last issue. The leading edge of the canard should be $1/16$ - $1/8$ " higher than the trailing edge. (Darth said to "experiment".) See diagram for details.



THANKS TO ESTES!

The latest Estes "Model Rocket News" carried the correction shown below. It was sure nice to see the folks in Penrose go out of their way to set the record straight. A hearty NIRA thank you too! Mary, Jeff and Dane!

-CORRECTION-

VOL. 21 NO. 3 "The 23rd Annual Space Modeling Championships". The Reserve Section Championship was awarded to the Northern Illinois Rocketry Association (NIRA) not the Wheaton Assn. of Rocketry. Our apologies.

LAUNCHER TIPS

After a long period of storage in a basement, garage or car trunk, launch rods get really rusty and drudy. Sandpaper is usually used to clean dirty rods, but steel wool is better. A few strokes with a wad of steel wool will clean up rods almost as good as new. If you can find stainless steel wool, it will last nearly forever. Check Ace Hardware stores for this useful range box item.

THIS OLD ROCKET

BRING NEW LIFE TO JUNKY OLD ROCKETS

I was almost ready to start the final finishing of "TOR". I quickly attached the rest of my scribed plastic sheeting, and moved on to the rear of the model. I sanded away most of the burned areas. Plastic Wood came on again to fill in the holes. After sanding this down, I coated the dried putty with sandable aliphatic resin glue. This provided a very smooth surface. I even went back over other Plastic Wood areas on the model and applied the glue.

The large shroud between the SIV-B and Service Module represents the area where a docking target was stored for the Apollo VII flight. The shroud was a clamshell separating into four pieces to allow access to the target. I simulated the separation panels with 80 lb. test monofilament. It worked just great.

I gave the model a good overall sanding with 320 grit, and prepared to apply a base coat of paint to seal everything. I experimented with a new primer; appliance epoxy paint. You can find this paint in the hardware section of E-Mart. I sprayed on a fairly heavy coat, let it set up for 20 minutes then put on another coat. The epoxy filler covered a multitude of sins on the model, and is the single biggest factor responsible for the good overall appearance of the finished model. My only regret was not putting a coat of dope on all that balsa. It would have cut down on the fuzziness a bit.



Bunny shows off the nearly complete Estes Saturn I-B.

I gave the wooden parts of the bird one final sanding, then got ready for color coats. For color painting, I might have used my airbrush and my favorite acrylic paints. But I went with the slightly more available alternative; Krylon spray. It worked great, and went on in a fairly heavy coat without runs. I had to use two coats to cover the brown primer. I let the paint dry for several days, then started masking.

The IB has more color break lines than Carter has pills. It took the better part of three hours to get everything masked off properly. To get the correct paint pattern, I used NARTS Saturn data, the Centuri kit instructions and Estes kit plans. (I managed to buy the Estes plans at MPT.) Krylon black did the rest.

After removing the masking, I touched the few blemishes with acrylics. I did notice that the model was difficult to paint well. All those shapes, crevices and nooks meant looking over the model before I quit painting to make sure everything got covered.



Overall shot showing brown epoxy primer.



Bunny applies rub-ons to replace decals no longer available.

Now came the finishing touch. Remember the decals we scraped away? How are you supposed to replace them on a kit that's out of production? I got red rub-on letters in $\frac{1}{2}$ and $\frac{3}{4}$ " sizes and spent a very pleasant couple of hours putting on "UNITED STATES" and "USA". I also drew up oversized sway motion targets, then photo-reduced them to the right size on my employer's Xerox. A bit of Ambréad's held them in place. A couple of coats of Dullcoat held everything in place.

I still have the capsule tower to finish, and there's some aluminized mylar to put on the Service Module, but it's clear the old Estes kit has been pretty well restored to its prime. All you Model of the Month winners better look out.

Now that our first TOR project has come to a close, it's time to total up the score and see where we went right, and where we went wrong.

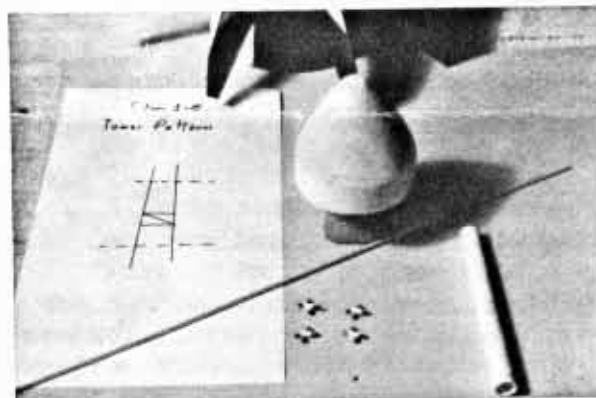
Pluses include Plastic Wood. I used this filler effectively in lots of ways. It has a place in your workshop, and is inexpensive. Paint remover worked well, too. If I had to do the job over, I'd remove every bit of paint from this model. Built-up fins, while time consuming, insure long life and good finishing. Epoxy paint sealed things quite well, and saved many hours over dope and sealer.

Minuses include that scribed sheeting. When coupled with the balsa strips, it was totally out of scale. I should have stuck with the strips throughout the model.

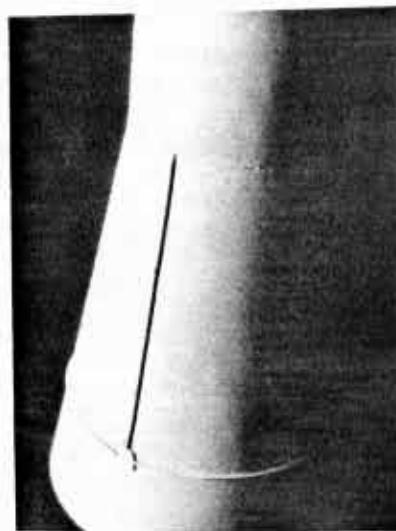
Don't mix sizes! The balsa strips also a sore point. They did the improving the corrugations, but too much time. Next time, I'll use bass or spruce strips that are pre-cut. Finally, I never did get those nozzles done. Paper shrouds, nosecones cut down to size, and even Mattel Vacu-form

attempts failed. I couldn't get the right combination of strength and good looks necessary to justify putting them on. Lastly, the Competition Chute I bought won't do. With the details, plywood fins and epoxy paint, the model was too heavy for the 55 gram chute to fit. Sigh. It'll just have to go into my Little Jbs.

Overall, "This Old Rocket" lived up to my expectations. The model, no longer available, was worth saving, and was sturdy enough to be restored. I found out about a lot of new products I'd never used before, and had a good time doing the work. I've already got a couple of ideas for the next "project". So send us your ideas and experiences. And stay tuned for the new "This Old Rocket"!



Hard made Apollo capsule parts.



Close-up of 80 lb. test monofilament detail on shroud.





REUSABLE ? IGNITORS ?

(Editor's note: The following article presents a largely theoretical idea and would require additional research to make it practical.)

Model rocket ignitors, like the motors they're used in, have always been a one-use, throw away item. It never made much difference, unless you misfire or burnout a lot. But with their rising cost, perhaps it's time to consider a reusable ignitor. A reusable ignitor would not only last a long time, but could even be easier to use than present ignitors.

The idea for a reusable ignitor is basically simple. It works on the same principle as an automobile spark plug. A spark plug works by putting a high voltage (about 20,000 volts) across a narrow gap. At lower voltages, nothing would happen, but with the higher voltage, an electric current will overcome the resistance and jump across the gap. This forms the familiar blue/white electric spark. The spark causes the gasoline/air mixture to ignite in the auto engine.

Can a similar spark ignite a model rocket motor? I think it can (or I wouldn't be writing this article). It is, however, an unproven assumption, and would have to be the first thing tested in a project. Someone with access to a well equipped high school or college physics lab could test the temperature of the arc easily.

Assuming the spark will ignite the motor, what would such an ignitor look like? Figure 1 shows a first approximation. It is simply two narrow wires that can stick into the nozzle and contact the propellant grain. At the moment of ignition, the nozzle environment is brutal; corrosive chemicals, high temperatures and high pressures. These elements can combine to destroy metals quickly. The two wires must be made of something durable, yet available to modelers. The most likely first choice would be stainless steel. It is durable, available in many forms, and relatively cheap. Beyond that,

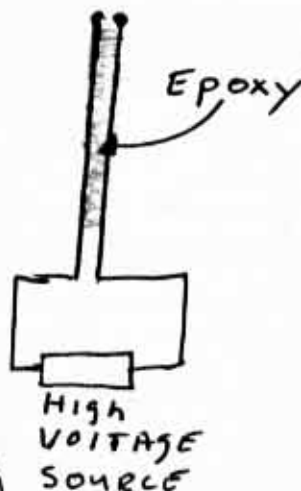
the design for the ignitor is open for experimentation. How big should the gap be? What size for the wire? How long will it last? Should the wires be insulated from one another?

How small can the ignitor be? Will it fit into the nozzle of most engines? All these questions must be answered to make a practical device for widespread use.

To use the ignitor, a standard launch system is obviously unusable since the reusable ignitor needs from ten to twenty thousand volts! A special power supply capable of delivering pulses of high voltage on demand will have to be designed. I admit I've given this problem little thought. So while I can't give you complete plans for this electronic marvel, I can give you a few ideas. The only way to get high voltage is with a transformer. If you don't know what a transformer is or how it works, I heartily suggest you find out before you start mucking around with high voltage.

After looking over this article, my first impulse (and maybe yours, too) is to throw the whole thing out the window and have myself committed. Reusable ignitors? Ten kilovolt power supplies on a rocket range? How bizarre can you get? I'm not sure how good an idea this is, but it's sure interesting to think about. It may not be completely practical, but someone could make a good R&D project out of it. I'm willing to discuss it in more detail with anyone interested, so give it some thought and drop me a line!

Fig. 1



7



MID WEST

REGIONAL

CHAMPIONSHIPS



82

DA WINNERS! Left to right:
Dual Egglofters (Bullet Bob and
Missouri Jones), C Division,
Pat Peterson (2nd in B), Dave
Enos (A).

"Gentlemen, ignite your engines!"

Question: What famous event is held each year in the Midwest at the end of May? If you answered "the Indy 500", it's time to trade in your Porta-Pad for a crash helmet. If you answered "the Midwest Regional Championships", you win a set of Tourister luggage and a fully paid trip to Chad, Africa.

MWRC-82 got off to a slow start when fog and wind greeted ~~the~~ contestants Saturday morning. The fog quickly lifted, and the ~~the~~ contest started. High winds and muddy fields combined to make Parachute Spot Landing an interesting event. Some people, mainly those unfortunate enough to be part of the measuring team slogging around the mud, complained about CD Bunny's decision to measure every flight, no matter where they landed. Tom Pastrick paced the crowd in the event, but was DQ'ed when his chute didn't fully deploy. The Dual Eggloft team of Alan "Missouri" Jones and "Bullet" Bob Kaplow accelerated into first in C Division landing 152 feet from the ~~starting~~ line spot. Steve Sangerman posted the best ~~lap~~ flight landing a mere 32 feet away. Steve was smart. He used the same pad as Tom, and got equally good results.

Strategy-wise, most people seemed to be ~~flitting~~ flying whatever old rocket they had. Only Tom had any sort of strategy. (Practice, practice, practice!) Most flights were either over powered or used too large a chute. Look at the results. The event is really worth and flown too little to encourage any effort on the part of contestants.



Surprized that Garfield likes a good prang? It was Bob's!

1/2 A International SD was a bit below average. Most times were in the 30-50 second range with few maxes. Even Sykos Streamers were not performing well in Saturday's wet ~~the~~ skies. Howard Olsen showed what consistent ~~the~~ flying will get you. He took A Division with three qualified flights averaging about 36 seconds. Chris King took B Division in the same manner. And Jim Zingler, the C winner, was the only guy with three qualified flights! C Helicopter Duration was dominated by Don Quixotes' but also saw quite a few DQ's.

a consistent swing-wing RG
 also took all three divisions
 AG. Mark Schmitt had a very nice
 ag here.

NIRA took its revenge in B International
 AG. Larry London took B with 100 seconds,
 and the HG Team blew everyone away
 with 374 seconds. (Lost both models, you
 turkeys! - RG) NIRA gave them Schmitt
 in A with 99 seconds.

Sunday was perfect with blue skies
 for tracking. D Altitude models went
 really ~~fast~~ high. The Dual Egglofters
 were the best with 598 meters.

Jim Zingler had a super 224 meter
 C Eggloft flight and won by a very
 comfortable 63 meters. Ric Gaff had
 210 until his egg came back cracked.

Space Systems was flown last.
 Things were very close and flight
 points made all the difference in C.
 Hanny didn't make things easy as he
 laid out a minimum sized landing area.
 Pat Peterson's good static points from

an Aerobee 350 earned him a first over
 Chris King's Raytheon Hawk. The Dual
 Egglofters used an E20 powered Centuri
 Saturn I-B to edge out the HG Team and
 and Tom Pastrick. Ric Gaff had a very
 nice flight on an FSI Black Brant, but
 came up short on static points.
 After everyone's systems were spaced,
 the checkered flag was waved and the
~~race~~ contest was over.

David Enos dominated A Division
 winning 579 big points. Chris King
 eaked our a 9 ~~second~~ point win over
 Pat Peterson, 672 to 663. The Dual
 Egglofters refused to crack under
 pressure and beat the HG Team with
 516 points.

A special thanks to everyone who
 timed, tracked, judged and helped out
 running the range. ~~Pat/ thanks to~~
~~the pit crew~~. The improvements at Bong
 are all for the better, and MWRC 83
 (that rhymes!) should be an even better
~~race~~ contest.

MWRC-82

A DIVISION	PSL	D ALT	C EL A	±AISE	C HD	F RC	F IEG	SPACE SYS	POINTS
1. David Enos	641-2	UNS/405-2	SP/SAF-*	22/24/26-2	85/82 -1	38/ 28-1	NG/ 42/ 32-2	***	579
2. Howard Olson	CHU-*	489/499-1	BRK/SAF-*	38/32/42-1	78/SEP-2	NG/ -*	***	***	270
3. Mark Schmitt	CHU-*	SAP/T -*	SAP/TL -*	44/NDP/NDP-4	UNS -*	PRG/ -*	34/ 65/UNS-1	***	204
4. Steve Sangerman	32-1	MIS/NC -*	***	28/12/23-3	***	***	HNG -*	***	78
B DIVISION									
1. Chris King	***	NC/TL -*	207/BRK-1	33/44/39-1	ROT/NR -*	52/ -1	NG/ 95/ -2	685/190/186.2-2	672
2. Pat Peterson	428-1	TL/316-2	195/BRK-2	60/SEP/54-2	50/ND-1	NG/ -*	SP/ 45/ 75-3	750/200/NC -1	663
3. Larry London	SEP	388/ - -1	161/ -3	37/NDP/32-3	***	***	53/ 47/ RB-10	***	330
C DIVISION									
1. Dual Egglofters	152-1	598/ TL-1	157/SAF-3	SEP/NE/43-6	47/UNS-4	104/NG -3	NG/67/*** -4	825/190/227.4-1	516
2. HG Team	163-2	***	112/***-7	UNG/59/51-2	97/ 92-2	NR/NVB -*	128/75/171 -1	680/180/ NC -2	504
3. Al Nienast	758-3	TL/477-3	152/SAF-4	LST/SEP -*	148/143-1	83/57 -1	NG/58/***- 6	740/180/ NC -4	444
4. Jim Zingler	CHU-*	512/***-2	224/ NC-1	45/36/36-1	NR/NR -*	55/51 -2	NG/ NG/ NG-*	690/175/ TL -*	378
5. Tom Pastrick	CHU-*	UNS/UNS-*	128/121-6	60/49/SEP-3	***	81/*** -5	NG/ 52/156-2	755/190/ 41.6-3	252
6. Ric Gaff	***	UNS/313-5	***	SEP/37/31-4	***	16/70 -4	58/ 64/69 -3	595/200/ NC -6	135
7. Zeemacoz Team	1062-5	298/ NC-6	161/120-2	32/SEP/SEP-*	ROT/***-*	47/39-4	65/***/***-5	***	102
8. Chuck Hoffman	***	NC/***-*	SAP/***-*	21/**/**-8	33/ 56-3	29/***-6	***	***	60
9. Tim Vaccaro	167-3	380/314-4	142/NC -5	SEP/20/25-5	SEP/***-*	NG/ NC-*	18/ NG/ 14-7	***	24

Other Data: Misfires - 13; Cuts - 1; Tracking flights - 59; Track Lost - 6; No Close - 10

KEY: BRK - Broken egg
 CHU - No chute
 HNG - Hung on pad
 LST - Lost by timers
 MIS - Three misfires
 NC - No close
 NDP - No deployment
 NG - No glide
 NR - No return
 NVB - Non-vertical boost
 PRG - Power prang
 ROT - No rotation
 SEP - Separation
 SP - Spit engine
 TL - Track lost
 UNS - Unstable

SECTIONS: NIRA - 2,469
 WWAR - 2,403

NOTE: Space Systems results are:
 Static points/flight points/adjusted altitude

SAF - Unsafe Flight



The Dual Egglofters ("Missouri" Jones and "Bullet" Bob) With their first place Space Systems Centuri Saturn L-B.



"It's wayyyyyy the heck up there!" Jim and Al keep an eye on a D Altitude model's flight.

M
W
R
C



John McDaniel (Zeemacz Team) prepares to snatch a 2nd in eggloft.



Judy Kaplow helped keep the range operating smoothly. Sorry, Judy. The line's buzy right now.



Mark Schmitt with his semi-scale Redstone egglofter; Tom stands by.



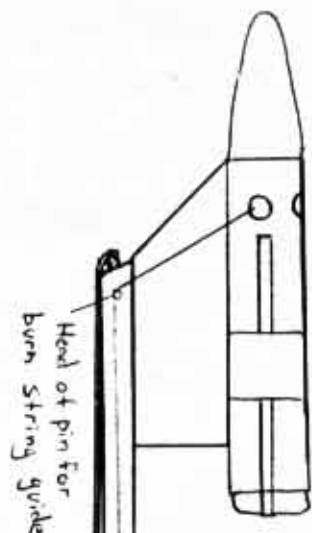
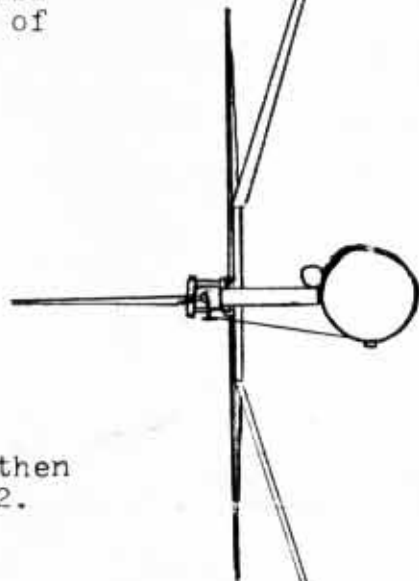
Al Neinast's Astrobee D Takes off. Model grapped a fourth place.

SEATTLE SPECIAL

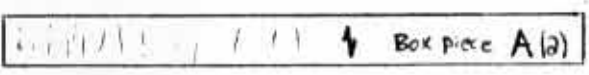
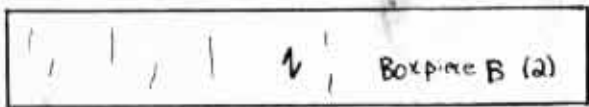
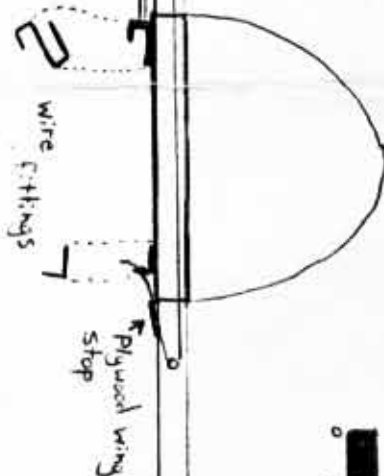
B-ENGINE SLIDE WING ROCKET GLIDER

boom $1 \times \frac{1}{4}$ spruce
 pylon $\frac{1}{4} \times \frac{1}{4}$ balsa
 box $1/32$ plywood

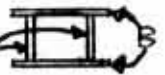
Carefully build and airfoil surfaces. Sliding box is made of 4 pieces of plywood assembled with hot stuff. All surfaces tissue covered. Rubber band connected to front of boom and box with music wire fittings. Wing is held back in launch mode by light thread that is burned by ejection gas of the engine. Use heads of pins to channel thread from box to holes in engine pod. Trim by sliding engine in pod and then add engine hook. Fly with B4-2.



LAUNCH MODE
 $1/2" = 1"$



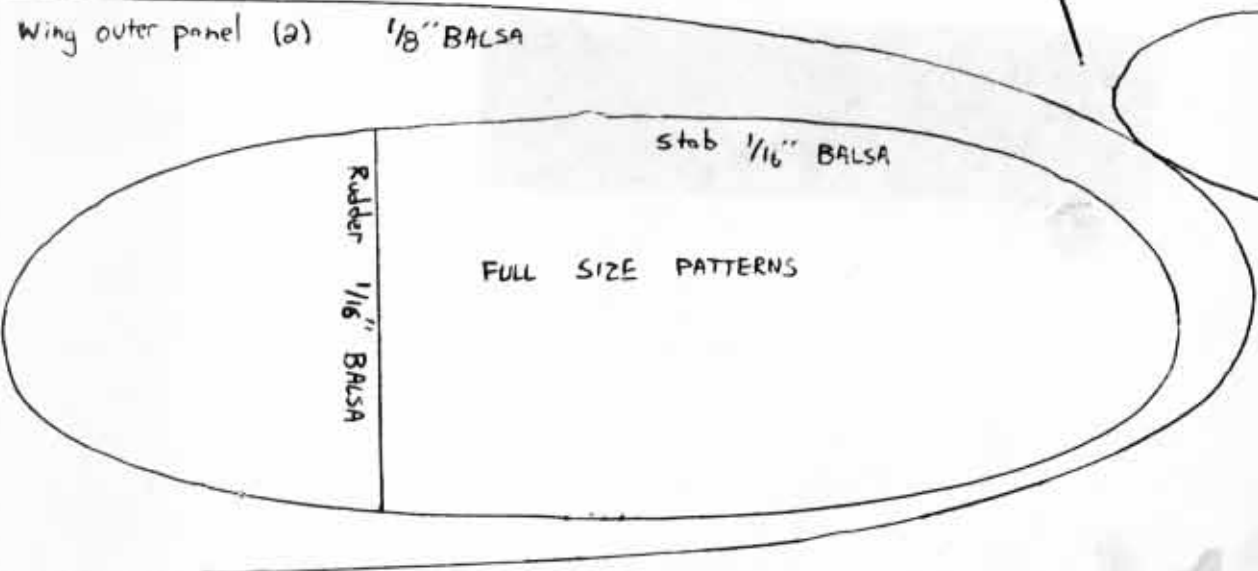
SLIDING BOX Cross Section



Wing center panel $2" \times 3" \times 1/8"$ Balsa (1) Not shown

Wing outer panel (2) $1/8"$ Balsa

stab $1/16"$ Balsa



GR '82

AUCHTUNG!

I AM THE LAST V-2 AND MY MISSION IS TO DISTROY LONDON!

NOTHING LESS THEN TOTAL ANNIHILATION. WHICH WON'T BE

EASY EITHER SINCE I'M JUST AN ESTES KIT AND NOT A REAL V-2 BUT I DID MEET VON BRAUN ONCE

OH LOOK, THERE'S LARRY!

FINISH MY MISSION! BUT ON LONDON LET ME TELL

GLEN ELLYN TOY AND 476 MAIN ST.

HONEST!

NOW I CAN BEFORE I PRANS

YOU ABOUT THE CARD SHOP

RIC GAFF
331 THIRD ST.
NORTHFIELD IL
60093



FIRST CLASS
ADDRESS CORRECTION REQUESTED