



# The Upstate Rocketeer



Official Publication of MARSTM, the Monroe Astronautical Rocketry Society,  
Section 136 of the NAR®



November/December, 1994

Rochester, NY

Volume 7, Number 6

## A Tale of Two Scaleups

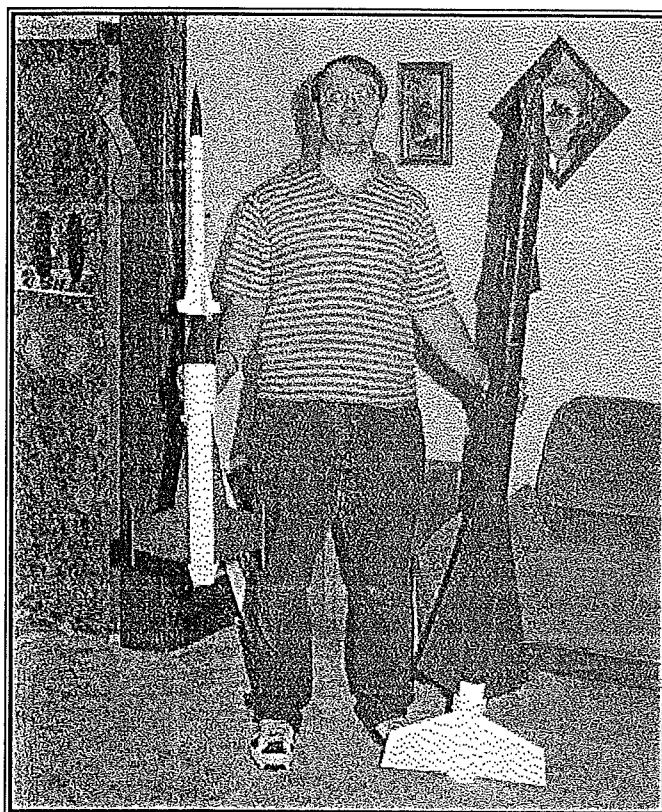
or "Scale of the Centuri,"

by Dan Wolf

### Introduction & Why

This article will describe why and how I scaled up two model rockets into high impulse rockets. These scale-ups were the result of a sequence of serendipitous events. Those of you who have read *High Power Rocketry*, watched an LDRS video, or attended a high power rocket launch know that one activity that many of the high impulse flyers like to engage in is the scaling up of their favorite model rocket kits from when they were a kid to a rocket many times larger. Scale-ups that have appeared at launches over the past few years include the Alpha, Mars Lander, Interceptor, Mosquito [which the rocket gods particularly abhor! — Ed.], Orbital Transport, Starship Vega, and others. As I attended high impulse launches in Danville and Culpeper, watched video tapes of LDRS, and read *High Power Rocketry*, one thing stood out. Virtually all of the scale-ups were of Estes kits. There were no Centuri kits, not to mention MPC and the other manufacturer's model rockets that I flew in my younger days.

As a rocketeer in both central Indiana and Rochester during the mid 70s, I can attest to the popularity of Centuri. The hobby stores I frequented in central Indiana were equally split between Estes and Centuri products. Upon moving to Rochester, I discovered that while both lines were represented here, for parts, it was all Centuri. Herman's shop on Dewey, Dean Henry's shop on Lyell, and even Dan's Crafts and Things carried mostly parts from Centuri. In those days, Dan's was particularly well stocked. He had virtually every item in the Centuri catalog. I did a lot of custom building and contest building in those days and I built many a rocket with Centuri parts. More than one model came out of my workshop



CENTURI RE-ENGINEERING—Dan Wolf's beautiful Laser-X and Stiletto scaleups. Photo by John Viggiano. ➤

based on an Estes Design of the Month but built with 100% Centuri parts! Thus it is of no surprise that some of my favorite model rocket kits are Centuri. I seem to be in a slim minority however.

A poll a few months back on Usenet's rec.model.rockets on your favorite rocket kit of all time was totally dominated by Estes. How models such as the 1/100 scale Saturn 1B, the Jayhawk, and the Mercury Redstone (all of which Estes later rereleased after the Estes/Centuri merger) could be left out is beyond me. Even worse was the omission of the 1/15th scale Little Joe II.

About the same time the Usenet survey was being done, John DeMar told me he had picked up a bunch of three inch cardboard tubes from the company that he was consulting with. They were the cores for HP plotter paper. The LOC 3" nose cone happens to fit them perfectly. John stopped by one

### Inside this Annual High-Impulse Issue:

Opinion / Editorial .....	2
As the Rocketry World Turns .....	3
Yo-Leven 11 Engine Cluster Plan .....	4
Club News .....	13
The Maniac's Maniac .....	15
NARAM-37 Committee News .....	16
Who Am I? .....	17

continued on page 8

## Op / Ed

## Rhymes of the Range

According to ancient tradition (dating back to at least 1989), the last issue of *UR* each calendar year is dedicated to High Impulse Rocketry. "High Impulse Rocketry," we hear a not-so-small voice ask, "not High Power Rocketry?" The fact is the former designation is correct when referring to big rockets with honkin' engines / motors / whoosh generators / propellant actuated devices, while the latter is a hopeless misnomer.

The two questions which are second only to the meaning of life are: "How high?" and "How fast?" Given a rocket of a certain size, shape, weight, etc., the factor which determines the answer to these two questions, more than any other, is Impulse. Impulse is a first-order parameter, and is the change in momentum imparted to a body, even Big Bertha's. We buy rocket engines (or motors or whatever) to do this for our rockets.

Because we have a gravity field to deal with, and drag forces, and other nasties, Force, the rate at which impulse is available, is important. The force imparted by a rocket engine is called Thrust. Thrust is a second-order parameter. Together, Impulse and Average Thrust serve as the basis of the NAR's engine coding system.

How does power fit in? Power is defined as the rate at which energy is converted from one form (chemical, for example) into another (e.g., kinetic). It is measured in Watts, or, if you're feeling old fashioned, horsepower. (There are 746 Watts in a horsepower.) We can compute the power of a rocket engine (its exhaust, actually) from its thrust and exhaust velocity.

The exhaust velocity of all black powder engines, from a 1/4A to an F100 (and beyond), is about 800 meters per second. As it turns out, exhaust velocity is an excellent indicator of a rocket engine's efficiency. The more efficient composite propellants we use have exhaust velocities ranging from about 1500 m/s (for Black Jack) to about 2100 m/s (for Blue Thunder). It depends more on the type of propellant than the size of the engine.

The power of a rocket engine can be computed according to the following formula:  $P = 0.5 \cdot v_e \cdot F$ , where  $v_e$  is the exhaust velocity and  $F$  is the thrust. (You may use average thrust, as in the following examples. This yields average power over the burn.) Here are some examples:

Designation	Average Power, Watts
Estes D12	4800
Estes E15*	4400
Aerotech E15	13500
Aerotech E30	31500
Aerotech F14	10500
FSI F100*	24000
Aerotech F25	22500
Aerotech F50	10500

(\* Average thrusts of 11 N and 60 N assumed for Estes E15 and FSI F100, respectively.)

It is easy to see the problem with power in this context: it has only peripheral influence on how high or how fast a rocket will go. The Estes D12 and E15 engines have about the same average power output, but most rockets will go far higher on the E (if they don't blow up). It's not the same as thrust, though: the E15s (from Estes and Aerotech) have very different average power outputs, and the F100's power is only slightly higher than the F25's, and is but a fraction of the F50's. Confusing? We quite agree.

In short, the term "power" has little to do with how high or how fast a rocket will travel, and is poor nomenclature. On the other hand, "High Impulse Rocketry" is entirely accurate, and sounds impressive. We have been using this term for over a year, and it has worked well for us.

You can still refer to power, however. Now that you know how to calculate it, imagine how impressed the crowd will be at that next high power (oops!) —er, we mean high impulse, launch when the LCO says, "This baby's got an I357, that's over five hundred horsepower, . . ."

Have fun & fly 'em high!

*John*  
John

*Upstate Rocketeer* is published by MARS™, Section 136 of the National Association of Rocketry, as a service to its members and rocket enthusiasts in Central and Upstate New York. Subscriptions are currently \$6 per year.

Submissions from all people are welcome. We prefer electronic form; please contact us for details. We accept photographic slides, prints, and Photo CD.

Editors of other newsletters and journals are welcome to reprint material which appears in *Upstate Rocketeer*, provided they extend to us a reciprocal privilege and they cite the source, unless the article, plan, or what-have-you indicates something to the contrary. Please contact the author if that's the case.

Editor: John Viggiano  
 Typography: Hermann Pütterschein  
 Contributors: Dan Wolf, Andy Schecter,  
 Bill Owens.

## MARST™ Officers:

President: John Viggiano  
 Vice President: Jeff Ryan  
 Secretary-Treasurer: Ferenc Róka  
 Immediate Past President: Jay King  
 President Emeritus: Dan Wolf

## As The Rocketry World Turns...

### news and rumors heard 'round the hobby, by Dan Wolf

**Manufacturers News . . .** This issue's news comes mainly from RCHTA show held in Chicago last month via posts on Usenet and Modelnet by Mark Bundick, Steve Scherbinski and others. Estes usually uses this show to announce new products and this year was no exception. Estes introduced several new glider kits at RCHTA. Among them was the Beta series Transwing. This is an easy to build flop wing glider with a 20-24" wing span. The use of molded plastic insures proper alignment making it a good beginners glider. Another new glider in the Explorer series is the SR-X, Estes's version of the secret Aurora spy plane. It is a lifting body that ejects an internal pod and then glides down. They also have a Space Shuttle boost glider that is only available as part of a starter kit. It's made of a material Estes calls TuffFlight that they say has the strength of plastic with the lightness of foam. Lastly in the glider area is the Sweet Vee, a new R/C rocket glider that is 34" long with a 55" wing span and a V tail.

Other new Estes kits include the Hijax, (an E2X model), the Firestreak, (in the Beta Series, with dual metallic streamers), and the Helicat, a new version of the Heliocopter.

The new Estes scale release is a 1/35 scale Mercury Atlas. This kit, in the Master series, is 33" long and 3.4" in diameter. It features a chrome body wrap and lots of blow-molded, vacuum-formed, and injection molded parts to replicate the vernier motors, fairings, and nozzles.

The only other rocket manufacturer at this year's show was North Coast Rocketry. North Coast was showing a 3' long Bomarc model that will retail for \$59.95. Matt Steele was at the show and he said that their motors are now shipping and he was trying to get some to Magnum in time for Danville.

Other rocketry related booths at the show included the Sport Rocketry booth, manned by Steve Weaver and Bob Sanford, the High Power Rocketry booth manned by Dennis Wacker and others, and the NIRA/NAR? booth manned by Lawrence Bercini, Bob Kaplow and others.

**International News . . .** The 1994 FAI World Spacemodeling Championships took place in Leszno, Poland the week of September 3-10. Countries sending teams this year included China, Czechoslovakia, France, Germany, Italy, Japan, Latvia, Lithuania, Netherlands, Poland, Romania, Russia, Slovakia, Spain, Switzerland, Ukraine, United Kingdom, and the United States. The Opening Ceremonies featured a parade of the competitors, Polish dance groups, and an airshow at the launch site. The ceremonies were attended by over 5000 locals. The weather was, cold and windy, so windy at times that the meet had to be stopped. This made duration flying most difficult. Altitude flying was also made difficult by a low cloud ceiling. On top of that, US team members were frustrated by the long delay time between announcing they were ready to launch and the actual launch. Sometimes the delays were several minutes, making it very difficult to both find and fly in "good air". In spite of this, the US team did quite well in several of the events.

In S6A (A SD) Ross Hironaka took first place, Dave O'Bryan third, and the US team finished second overall. John Marsh took the gold in the Junior division in S3A (A PD). Phil Barnes took the silver in S4B (B Boost Glider). Bob Biedron flew a Nike-Apache in S5C (C Scale Altitude) to first place and a gold medal.

In S7 (scale) Bob Biedron medaled again, this time earning a bronze medal with his beautiful Ariane 3 model. Jan Kotuha of Slovakia took the gold with a Saturn 1B, while the silver went to Alexandr Levykh of Russia with a Soyuz model. Perhaps owing to Bob winning the gold with an Ariane last time around, Arianes dominated the field of entries with a total of nine, versus 3 Saturns and 2 Soyuz models.

S8E (E RCRG) proved to be a challenging and competitive event with 23 entries from 10 countries. After the first three rounds of flying, 11 contestants were tied for first place with 3 maxes. Only one competitor dropped out after the 4th round. Flying lasted into the fifth round. The top places (and US flyers) were:

1. Stefan Mokran (Slovakia)
2. Franz Weissgerber (Germany)
3. Alojz Pajdlhauser (Slovakia)
6. George Riebesehl (USA)
8. Kevin McKiou (USA)
17. Ben Roberto (USA).

The US S8E team finished fourth overall. This event was flown on the last day in very poor conditions. Winds were reported to be as high as 50 mph at times! Many gliders drifted far down range, requiring recovery efforts more suited to P/D. Best quote: "It's pretty damn hard running a 1/4 of a mile with a transmitter AND trying to control a model," Ben Roberto, Team USA. All in all a good showing for the US team and we salute them.

**Regulatory News . . .** The editor had the good news on the FAA front in the last issue. The nine year battle with the FAA on changing FAR part 101 is over. Thanks go out to many people to seeing this through but especially to NAR counsel Joe Egan.

Now that Joe is done with this one, perhaps he can start working on the ATF situation. The grace period with the ATF is now over. What does that mean for you and me? Well, if you have any rocket motors that contain more than 62.5 grams of propellant (or reloads with more than 62.5 grams of propellant per slug) or if you have any Thermalite fuse, you now have to have an ATF low explosives permit and a class 4 low explosives magazine. The magazine must be located at least 75 feet away from any inhabited building (my storage shed is 10 feet too close to my house!). Representatives from the HPRMDA, TRA, and the NAR have been trying to set up a meeting with the ATF since July to discuss this issue but so far the ATF people have not been available. ➤

## Yo-Leven: It's a Natural!

### A High-Impulse 11 Engine Cluster plan, by John Viggiano

A few issues ago [January-February '94 UR] we featured plans from Fox Valley Rocketry for Rick McBroom's Lucky Seven, a high-impulse seven engine cluster rocket. Dan has his completed, while I, who can hardly resist the urge to tinker, came up with something a little different. A roll of seven is unlucky as often as not in dice; here's a plan that's always lucky because a roll of 11, while it doesn't always win, is never a loser (unless you're a wrong bettor, but that's a different story). This rocket has a 38mm core engine and room for ten 18mm engines, for a total complement of 11. A roll of eleven in dice is called "Yo-Leven" in better dens of inequity everywhere, so that's the name of this rocket.

Here's the basic premise: Five 3.2mm (1/8") fins and ten 18mm engine mount tubes (I used Beefy-20s) will fit nicely around Aerotech 48mm

(1.9") OD tubing. 38mm engine mount tubing is easily centered in the 48mm OD tubing, using slices of Aerotech tube coupler as centering rings. The 38mm engine mount tubing is the main load-bearing member in the lower section of the rocket. It is a very strong tube. The glassine outer wrap used on most tubes does not permit glue to bond well; you should roughen the surface (sand away some of the glassine) wherever something is bonded to a tube.

### Parts

- 10 - BT-20 or heavier equivalent, 17" long
- 10 - EB-20 Engine Blocks
- 1 - LOC MMT-1.52, 34" long
- 1 - Aerotech 1.9" diameter tube, 365mm (14 3/8") long
- 1 - Aerotech Stage Coupler for 1.9" tubing
- 2 - LOC 3.10-1.52 Centering Rings
- 2 - LOC Payload Couplers for 3.1" Tubing
- 1 - LOC BT-3.10, 34" long

- 1 - LOC BT-3.10, 8.5" Long
- 1 - LOC PNC-3.10
- 1 - 12x24" sheet 3.2mm (1/8") Birch Ply
- 5 - 3.2mm x 10mm x 280mm (1/8" x 3/8" x 11") Strip Balsa
- 5 - Nose Blocks for BT-20
- 1 - hank 1/2" flat elastic
- 1 - 30" - 36" parachute
- 1 - 1/2" Launch Lug

### Construction

Most of the construction above the waistline is your conventional high-impulse stuff. I used Stu Barrett's excellent anti-zipper shock cord anchor, which has the added benefit of eliminating wadding. I'm all for that. I want to try someday an RC ejection system, so there's an extra section for that. But most of the specialized construction is near the bottom, and that's where this article will concentrate.

Start construction by assembling the Yo-Leven skeleton, as illustrated in Figure 2. The Aerotech tubing is cut into two pieces, one 335mm (13 3/16") long, the other 30mm (1 3/16"). The coupler for this tube is cut into slices, 30mm long. These are used to center the

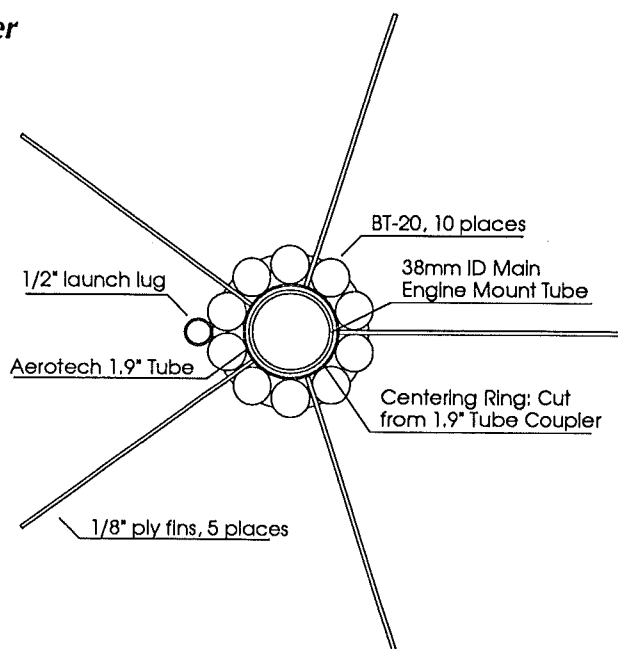
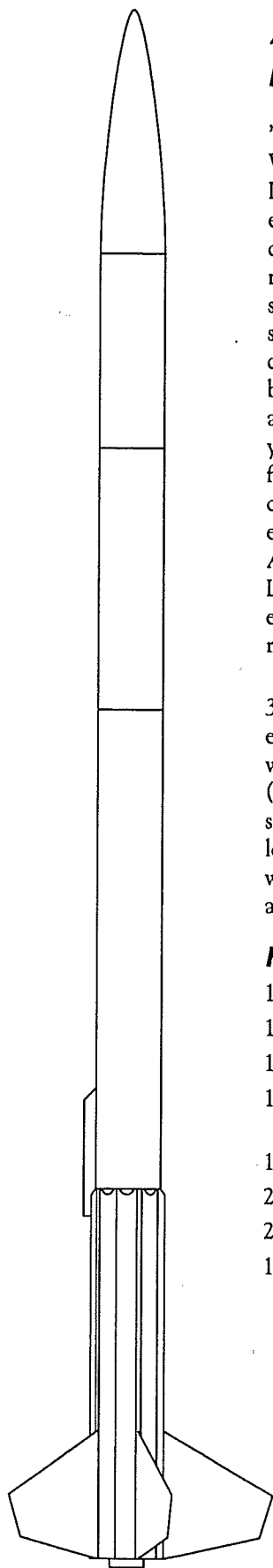


FIGURE 1: WORM's-EYE-VIEW—What the Yo-Leven looks like from below. Note how the main engine mount tube is centered in the 1.9" tubing with slices of tube coupler. The fins attach to these central tubes, rather than the 18mm tubes, for strength. ➤



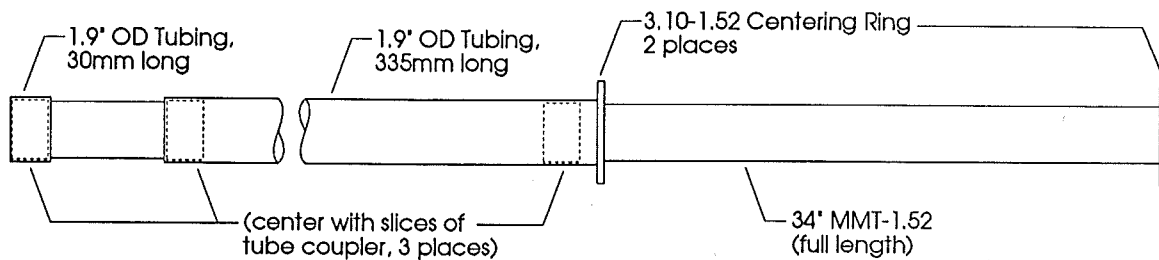
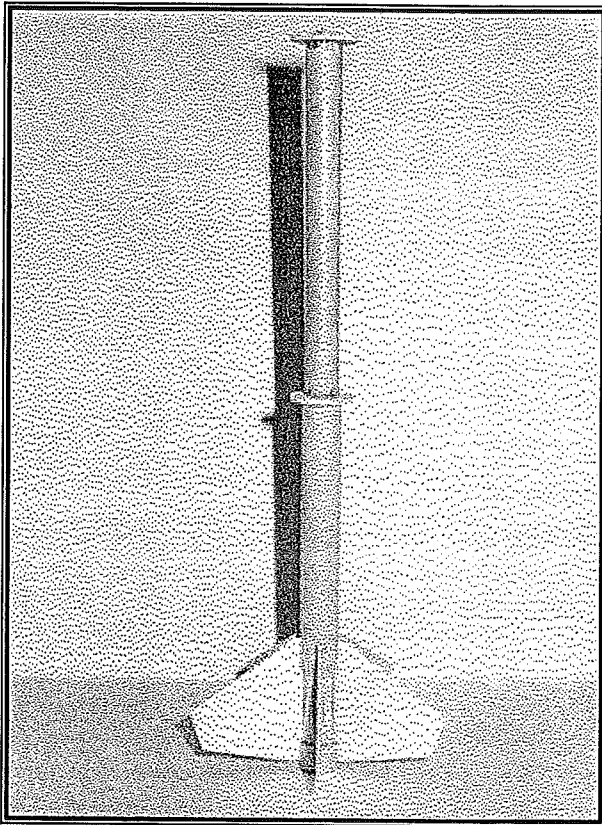


FIGURE 2: YO-LEVEN SKELETON — Before fins, outer engine mount tubes, and the upper body tube are attached, you should have a skeleton which looks like this. Greater bending moment resistance for the fin mounting is afforded by the let-in section near the rear. The MMT-1.52 runs the entire length of this assembly. The fins are glued on next. ➤



The Yo-Leven during construction, just after the fins were glued onto the skeleton. Note that the 1.9" OD tube does not extend past the aft centering ring, about halfway up. ➤

main engine mount tube. Roughen the 38mm engine mount tube, and mark it 30mm (1 3/16"), 116mm (4 9/16"), 146mm (5 3/4"), 410mm (16 1/8"), and 440mm (16 5/16") from the aft end. These marks are used to position the slices of Aerotech tube coupler. One goes between the aft end of the engine mount tube and the first mark; the other two go between the last two pairs of marks. Glue them in place.

Next, glue the longer piece of 1.9" OD tubing over the two forward coupler slices. The aft end of this tube should be flush with the aft end of the middle coupler slice, as shown in the skeleton diagram. Note that there is about 10mm between the forward ends of the forward coupler slice and the 1.9" OD tubing. Glue the short piece over the aft coupler

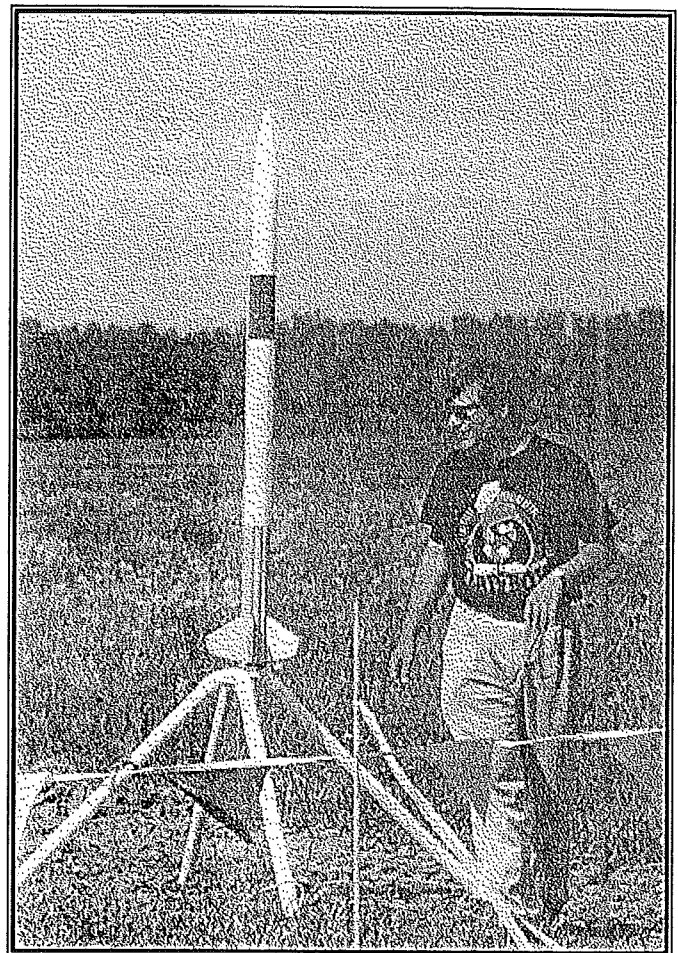


Photo by Ferenc Róka. ➤

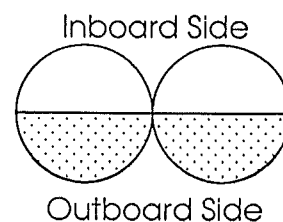
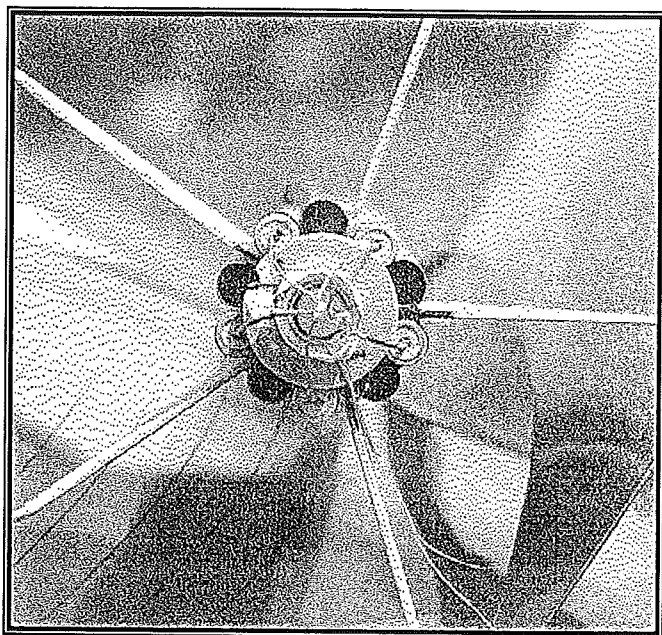


FIGURE 3 — Forward end view of a pair of 18mm engine mount tubes, showing the nose block halves glued in place. The un-blocked half will face the inside. ➤



**BUSINESS END**—The smokey end of the Yo-Leven before its third flight. Ignitor cord is used to airstart the five outboard C6s from the composite core. Photo by John Viggiano. >

slice.

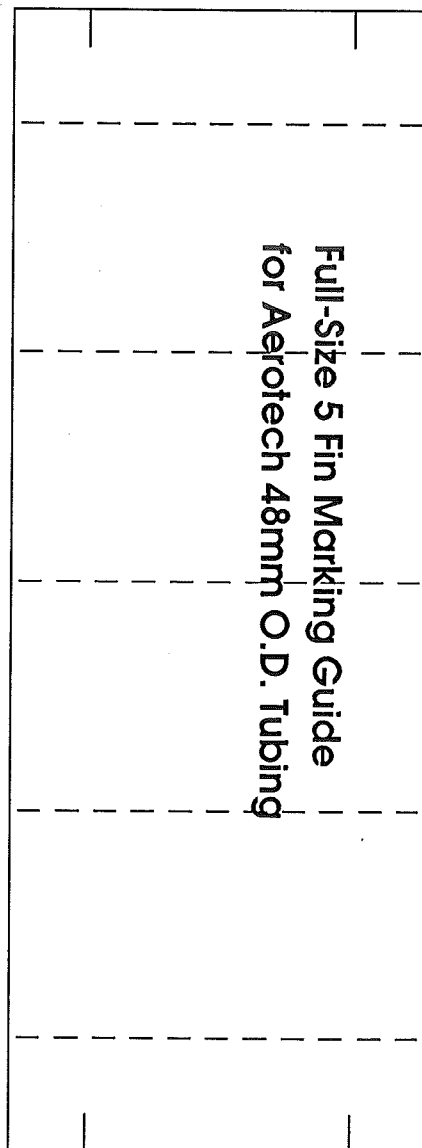
Mark the 1.9" OD tubes for the fins, using the guide provided. Start by marking the longer forward tube, then extend the lines to the aft portion using a piece of angle moulding. Good alignment is important, because the fin alignment determines the alignment of the 18mm engine mount tubes later on.

The large 3.10-1.52 centering rings come next. Glue one so it is flush with the forward end of the 1.9" OD tubing, and the other a couple of millimeters (1/16" or so) from the forward end of the main engine mount tube. Fillet these well. You should have something which looks like the skeleton in Figure 2.

Test fit the fins. Chamfer the corners of the short tabs, if necessary, and glue them securely to the tubes. The 2.4mm (3/32") tabs provide some limited amount of bending moment relief. Otherwise, the bulk would have to be absorbed by the thin 18mm engine mount tubes. Fillet the fins, heavily on the let-in section and lighter on the two parts resting on the Aerotech tubing; you don't want to interfere

**Yo-Leven 2/3 Scale Fin Pattern  
(enlarge to 150%)**

**Full-Size 5 Fin Marking Guide  
for Aerotech 48mm O.D. Tubing**





with the tubes which must be glued on later.

While the glue is drying in the steps above, begin assembling the 18mm engine mount tubes. Glue them together in pairs, side by side, on a flat surface. Cut the nose blocks in half, so you'll have 10 pieces each with a semi-circular cross section. The idea is to allow the outboard engines to vent while minimizing the amount of ram air entering the outboard engine tubes. Install a nose block half in the forward end of each 18mm engine mount tube, as shown in Figure 3. I smeared the inside face of each nose block half with carpenter's glue to provide some burn resistance. Glue an engine block 65mm (2 9/16") from the aft end of each tube. This will allow the 18mm engines to stick out 5mm (3/16"); flush with the end of the core assembly.

Glue the 18mm engine mount tubes to the skeleton, with the blocked half of each tube front facing out. The aft end of these tubes should be flush with the trailing edge of the fins, and 5mm (3/16") forward of the aft end of the core assembly. There will be a gap between the forward end of the 18mm engine mount tubes and the aft CR-3.10-1.52 centering ring. This will permit the ejection gasses to vent to the outside.

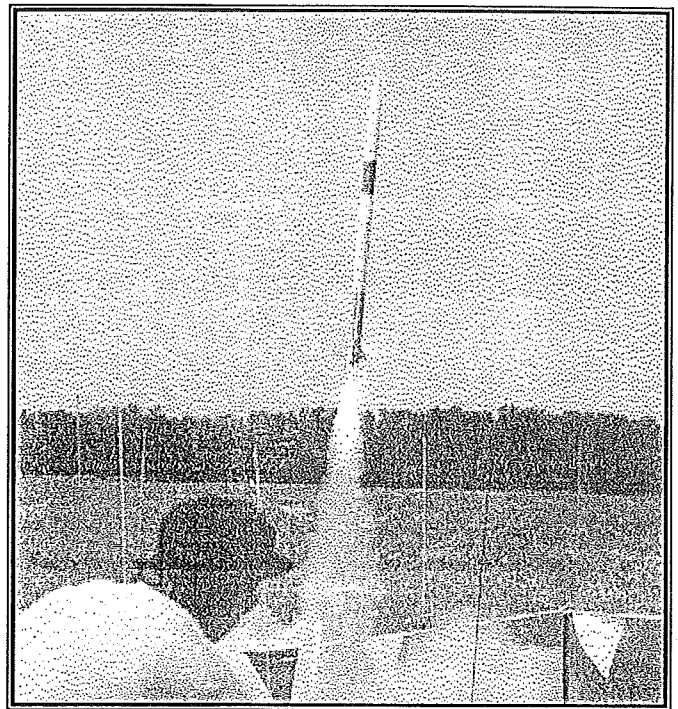
Fill the gaps between the tube pairs forward of the fins with the balsa strips. Glue them in place, and apply a fillet. Cut the long piece of BT-3.10 tubing into two pieces, one 300mm (about 12") and the other 564mm long (about 22"). Glue the longer of these pieces over the two CR-3.10-1.52 centering rings, flush with the forward ends of the 18mm engine mount tubes. A small portion of these engine mount tubes will stick out beyond the main tubing, as illustrated in the rear view in Figure 1. Chamfer the forward ends of the 18mm engine mount tubes for better streamlining (and neater appearance).

Loaded, the center of mass will be close to the point where the main LOC BT-3.10 body tube ends and the 18mm engine mount tubes begin. The launch lug should straddle this joint. Install it so its aft portion fits in the valley between two adjacent 18mm engine mount tubes. This minimizes the launch rod's interference with these tubes (and the fins).

The rest of the construction is straightforward. As I mentioned above, I used Stu Barrett's anti-zipper mount. This eliminates the need for wadding. After five flights, all with H engines in the core, I have yet to even discolor the LOC 34" chute. If you don't want to use this baffle system, just keep the 34" length of the BT-3.10 in one piece, and eliminate one of the bulkhead couplers. You'll still have a payload section.

## Flying

The ten outboard tubes offer versatility, if not a whole lot of impulse. Still, ten C6 engines will add about 95 Newton-seconds, which is nothing to sneeze at. In addition to the engine in the core, you can use 0, 2, 4, 5, 8, or 10 18mm engines and still keep things symmetric. In the case of the 4, 8, and 10 outboard engines, you can even use two different types. Here's how I've flown it:



21 May: H180-MW in core, 2 B6-4s.

22 May: H220-9 SS in core, 2 B6-4s.

5 June: H128-MW in core, 5 C6-5s.

17 September: H220-9 SS in core, 5 A8-3s and 5 C6-7s.

18 September: H128-MW in core.

All outboards were attempted to be air started. The second flight was the only one in which all outboard engines were confirmed lit (aside from the fifth flight, for which no outboard air starts were attempted). A full complement of 11 engines was used on the fourth flight. Unfortunately, some of these were shaken loose at liftoff (the H220 really gives this bird a boot, which was compounded by my failure to tape the small engines in very well), so not all of them went along for the ride. However, on the third and fourth flights a distinct additional thrusting phase was clearly heard at about the right time into the burn. The Yo-Leven performed beautifully on all these flights. I don't know what I'll fly her with next time, perhaps a G-160. In the meantime, I'm going to work on that R/C ejection system.

I have had better luck getting the outboard engines air-started when using the Silver Streak engines, which are Black Powder, than with the White Lightning composites. I feel that this is because the composites, with their exhaust velocity of about Mach 6, yank the ignitor cords right out from the outboard engines. Black Powder engines have exhaust velocities of about Mach 2.5, which is why they sound different, and probably why the ignitor cord didn't get yanked out. Anyway, I'm out of the stuff now, so no more air starts for a while.

Consider making the Yo-Leven part of your stable. She's a great performer, looks unique (though Jerry Irvine will probably tell you he invented it first), and offers some interesting possibilities.

*A Tale of Two Scale-Ups, continued from Page 1*

day on his way home from work with the whole back seat of his car filled with them and so I grabbed a half dozen or so.

Looking for something different to fly at Culpeper last fall, I decided I should do a couple of scale-ups of old Centuri kits. I'd never done a scale-up before so I didn't want to do anything too complicated. I managed to find my 1981 Centuri catalog (I wish I still had the ones from the seventies with the Enerjet composite E and F motors). It didn't take too long perusing through it to come up with a couple of scale-up prototypes. The models I selected were the Laser-X and the Stiletto. A BAR on Modelnet commenting on the rockets he had when he was a kid said it all about the Laser-X when he said, "nothing looked cooler to a 13 year old." I guess there are others who have fond memories of the Centuri kits. Anyway, I built two Laser-Xs "back then" and I actually bought a third, but I tore into the bag once in the early eighties when I was flying competition almost exclusively and took the #5 (BT-5 equivalent) and #13 (BT-55 equivalent) tubes to build some contest birds. This is unfortunate as I'll explain later.

I chose the Stiletto for a combination of two reasons. First, Bud Piscini sort of got me interested in trying composite motor staging with all of the staged flying he has been doing. Second, the Stiletto was the first two stage kit that I really liked. I had the Estes Apogee II but I didn't really care for the design and I rarely flew it.

**Laser-X Scale-Up**

Since I planned to use the 3" tubing for the bottom part of the rocket, I needed to see what available tubing I could use for the top part. The calculations showed that the 29mm motor mount tube from LOC would be very close but I didn't have a "pointy" nose cone for it so I decided to go with the slightly larger Estes BT-55 and use the PNC-55 nose cone as its shape is the same as the old Centuri cone.

One of the hardest parts of the scale-up was deciding what lengths the two body tubes should be (sure wish that Laser-X bag still had the tubes in it!). Although I had the plan, it didn't indicate the length of the two tubes, so I made measurements of the plan and of the catalog picture to try to come up with the right dimensions. Fortunately, the kit bag still had the die-cut balsa fins in it, so figuring what size the new fins should be was just a matter of plug and chug.

The coupler between the upper and lower sections is made from a 3 inch long piece of the three inch diameter tube. Cut a line lengthwise, then slit it along the line. Then roll it together so that it will slide inside the three inch body tube. This gives an indication as to how much of the tube must be removed. The idea is to remove a section of this coupler tube so that when the ends of it are joined together, it will just fit into the 3" tube. The piece that is removed is put behind the joint on the inside. Glue the entire assembly together with 5 minute epoxy. Next cut out the centering rings for the coupler and glue them to the ends of the coupler tube. Again use 5 minute epoxy. Once this step is done, check to see it fits okay in the 3 inch body tube. It needs to be a good snug fit, but not too tight. The next step is to glue the upper body tube (BT-55) into the

coupler assembly. This tube is 25" in length. I cut down one of the 36" tubes that I picked up at one of the NARHAMS launches. Otherwise, use a BT-55 tube coupler with a full 18" and a 7" piece from Estes. Glue the finished 25" long tube into the tube coupler so that the BT-55 tube joint is towards the coupler. That way the joint should end up being covered by the shroud.

The shroud is five inches long. Use the equations from Stine's book; the tube O.D.s are 3.1" and 1.36". Make the shroud from thin styrene plastic (Evergreen plastic), .01 or .02 thickness. Rather than making an overlapping glue tab, make it the exact size and butt the ends together, and glue a scrap piece of styrene to the back side. Slide the shroud over the BT-55 tube all the way down so that the edge of the shroud hangs over the edge of the coupler assembly. Use a scrap piece of plywood to cover up the BT-55 tube opening at the end of the coupler. Glue the eyebolt for recovery system attachment to the centering ring, not the piece covering the hole.

The upper fins are made in two sections from 1/8" balsa. They attach to the upper body tube just above the shroud. I prefer to glue the fin sections together with aliphatic glue, sandwiching them between layers of wax paper, with a weight on top to keep them flat. Then I finish them with Elmer's Fill and Finish before attaching to the body tube. The nose cone is glued on next. This completes the construction of the upper body tube assembly.

The lower body tube is 18" long. Use LOC 3" tubing. Since the length was short, I actually used an old tube from work that was used to hold drawings. It has the same ID as the LOC tubes, but is slightly thicker and has a rough orange finish. I used a partial through the wall technique for the fins. I built the fins with extra tabs so that they went through the wall to the motor mount tube for the first ten inches of length, so the tab extended for the length of the motor mount tube only. The remainder of the fin was surface glued to the body tube. Because of this type of fin construction, the motor mount assembly was slight different. First, the upper centering ring was glued to the motor mount tube. Then, while this was drying, I cut the slots for the through the wall fin tabs in the body tube. The tabs are 90° apart, 1/8" wide and extend all the way to the end of the body tube. The motor mount tube assembly is then glued into the body tube so that it extends two inches from the end of the body tube. Slide the lower centering ring over the motor mount tube into the body tube until it is flush with the body tube. This keeps the motor mount tube in the proper position until the glue dries. Once the glue is dry, remove the lower centering ring. Now glue the fins on one at a time, epoxying the fin tab to the motor mount tube, and the fin portion ahead of the motor mount tube to the body tube (do not apply glue to the area where the fin comes through the body tube). Once the last fin had been glued in, glue the lower centering ring in, making sure the body tube is glued down tightly to the centering ring. Now the fillets can be applied.

The fin spikes are made from 1/8 dowel (the original Laser-X used toothpicks). They are 5.75" long, and tapered towards the ends (but not too pointy).

The last procedure is to make the coolant vane assembly. This begins by gluing a 2" piece of BT-60 around the motor



mount tube protruding from the bottom of the rocket. To center it, I used tape to build up the motor mount tube so that a piece of BT-55 would fit over it. Then I used Estes BT-55 to BT-60 centering rings. The coolant vanes, made from 1/8" balsa, are now glued on. First glue on four, one directly below each fin. Then glue on the remaining eight, centering two between pairs of the first four. It is much easier to fill the grain on these before gluing them on.

I won't go into other details of assembly. Just don't forget the launch lugs and shock cord mount. Finishing of this model is a time consuming process. There are lots of seams and joints to fill. The results are worth the effort however.

I painted the Laser-X in a similar paint scheme to the first one I had as a kid. Eventually, I plan to have the decals scaled up too, but I couldn't wait to fly it so I've already flown it twice. The first flight started out great on a G80, but the ejection charge fired immediately after burnout. Fortunately, there was no damage. The second flight was on an F25 and it was a perfect flight and a real crowd pleaser.

### ***The Stiletto Scale-Up***

Unfortunately, my original Stiletto went where most minimum diameter staged models usually end up (right Bud?) and I did not have a model to scale from. I would have to use the catalog picture and the dimensions listed in the catalog. The scale factor was the easiest part. Going from a 3/4" diameter rocket to a 3" rocket works out to a scale factor of 4. The length was a little more tricky. The catalog only listed the overall length and the picture shows the booster falling away. I also wasn't convinced if the catalog picture was even an actual model, but instead an artist's rendering and perhaps a not too accurate one at that. Anyway, after fooling around with it a little bit, I came up with the dimensions for the body tube lengths (top and bottom stage). John's tubes were too short for the length of the top stage so I ended up with an additional side benefit. The scale-up now has a payload compartment in the upper stage. The fins were even harder to figure out. I measured and remeasured the ones in the catalog picture. The booster ones were particularly difficult too determine.

That's when I learned another lesson on scale-ups. The resulting fins can be huge. I decided that the booster fins were just too big and I made them smaller. The end result is fins that are not true to scale. So what. This isn't FAI S7, it's a scale-up. As long as it resembles a Stiletto or perhaps more importantly, how I remember the Stiletto, then that's good enough.

The upper stage tube for the Stiletto worked out to be 50" long. If using LOC body tubes, use one full length piece and a 16" piece. I made a coupler similar to the one used for the Laser-X out of extra 3" tubing and a solid 3" disk of 1/8" plywood. The motor mounts are made using 29mm LOC motor mount tubes and 1/8" plywood centering rings. This time I elected not to use through the wall fins, perhaps a decision I will regret later. Instead I drilled 1/16" holes along the lines I drew to mount the fins. I also drilled 1/16" holes through the fins sideways, about 3/32" above the root edge. I used 5 minute epoxy to glue the fins down, and 20 minute epoxy for the fillets. Time will tell if this was the right decision.

To couple the two stages together, the original Stiletto had a small tube that went on the outside of the series 7 tube. This tube was glued to the bottom stage and had two holes in it. The upper stage fins had a gap between them and the body tube for the bottom 3/4" of their length to allow this coupling tube to slide over the upper tube. The holes were blocked at this point, but at staging, when the booster starts to slide off, the holes act as gas vents to allow the booster to stay attached for a few extra milliseconds. This extra time allows for the booster motor's gases to blow up into the upper stage motor's nozzle and ignite the upper stage reliably. Some readers may note that this is a technique similar to what G. Harry describes in recent versions of the *Handbook of Model Rocketry*. [Sine distinguishes his "vented staging" idea from the Centuri "Pass-Port" staging by pointing out that he keeps the vents always open — Ed.]

For the scale-up, I didn't want to leave the gap between the fins and the body tube as I was worried about fin flutter. Instead I cut pieces of left over 3" tube that fit between the fins. In essence, I have a scaled up version of the Centuri coupler, but with slots for the upper stage fins to slide into. I'm still mulling around in my head different options for staging, chute deployment on the booster, etc. I plan to fly it single stage first (maybe at the November 5th launch) and try it two stage later.

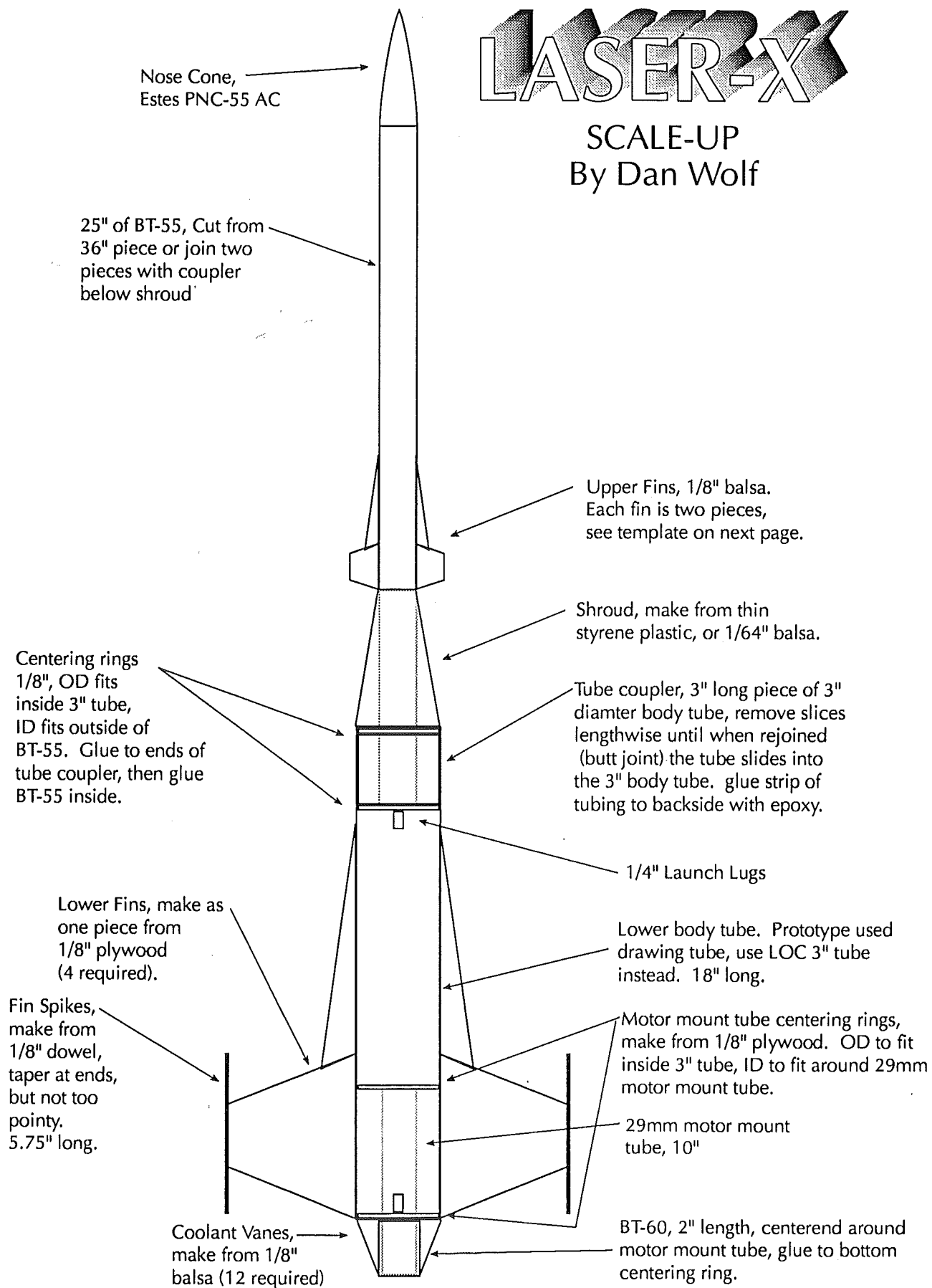
Final random comments on this scale-up. I had a hard time deciding what thickness plywood to use. I decided to go with 1/8", thinking that 3/16" would have been overkill. 5/32" may be just about right. I also decided to use 29mm engine mounts. I had thought about using 38mm but decided that if I was staging, H to H motors would be fine. Also, for early flights, G to F or G to G will be used. The nose cone is a LOC 3" that I bought from Mike Showalter down in Culpeper. The motor mount tube and centering rings could be purchased from LOC but I bought my tube off of John Viggiano and cut the rings myself from 1/8" plywood. I used brass tubing for the launch lugs. If you've built any high power rockets kits from LOC or NCR, then you should have no problem with this one. Look for the follow-up article on the staging details and flying it two stage once I've had a chance to fly it.

### ***Final Summary***

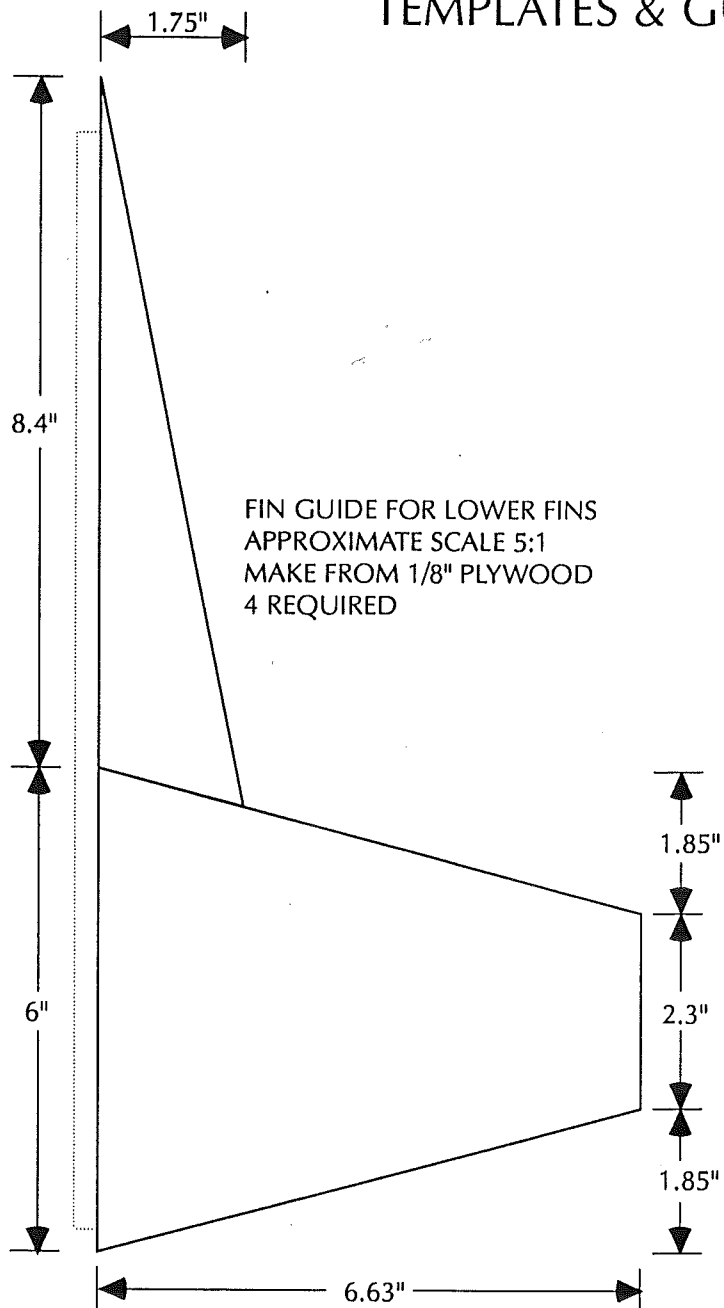
All in all I found this whole project to be a lot of fun and very enjoyable. With the tubes from John and John, the discounted nose cone from Mike Showalter and a sheet of 1/8" plywood, I ended up with a couple of relatively inexpensive mid to high power models that are nice looking and fun to fly (I also used another of John D's 3" tubes and several of John V's 29mm tubes and another 3" LOC cone I bought from Mike this year to build a Lucky Seven from the plans in the January/February UR). Although larger version scale-ups would have been fun too, the 3" diameter models both come in under 1500 grams which means I can now fly them at demos and sport launches without a waiver. I hope this encourages other club members to try a scale-up. What was your favorite rocket as a kid? Image one two to four times larger, get out your parts catalogs and your calculator and have fun. I look forward to seeing large versions of those vintage Estes (and hopefully Centuri) kits at club launches in the future.

# LASER-X

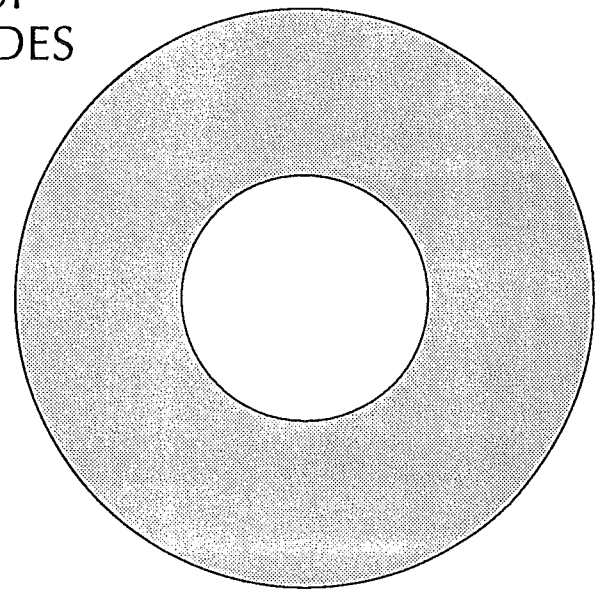
SCALE-UP  
By Dan Wolf



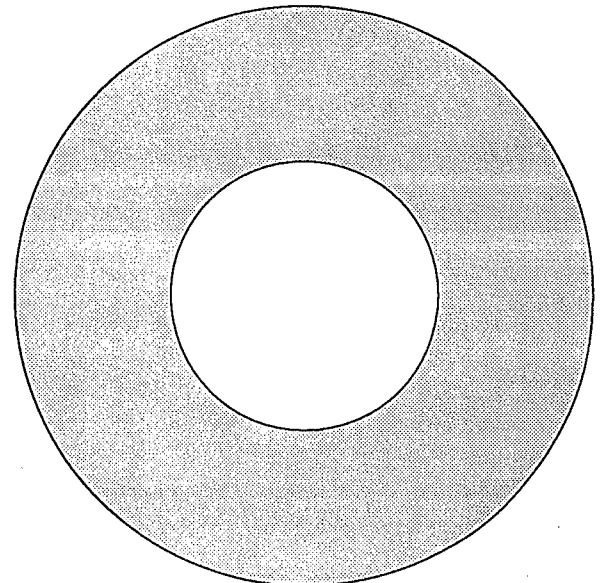
# LASER-X SCALE-UP TEMPLATES & GUIDES



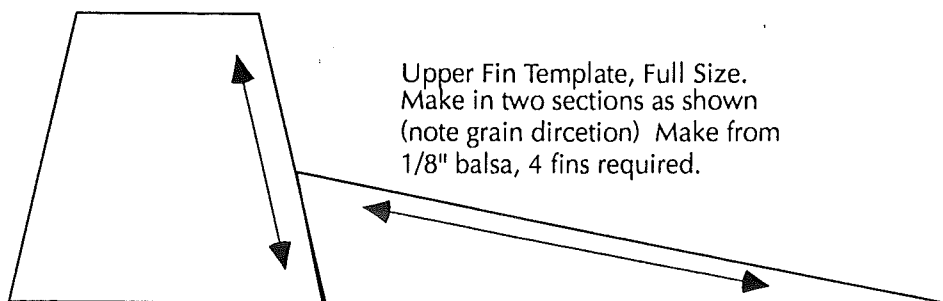
FIN GUIDE FOR LOWER FINS  
 APPROXIMATE SCALE 5:1  
 MAKE FROM 1/8" PLYWOOD  
 4 REQUIRED



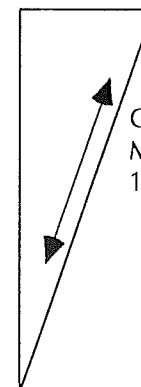
Engine Mount Centering Ring  
 Make from 1/8" Plywood, 2 Required



Tube Coupler Centering Ring  
 Make from 1/8" Plywood, 2 Required



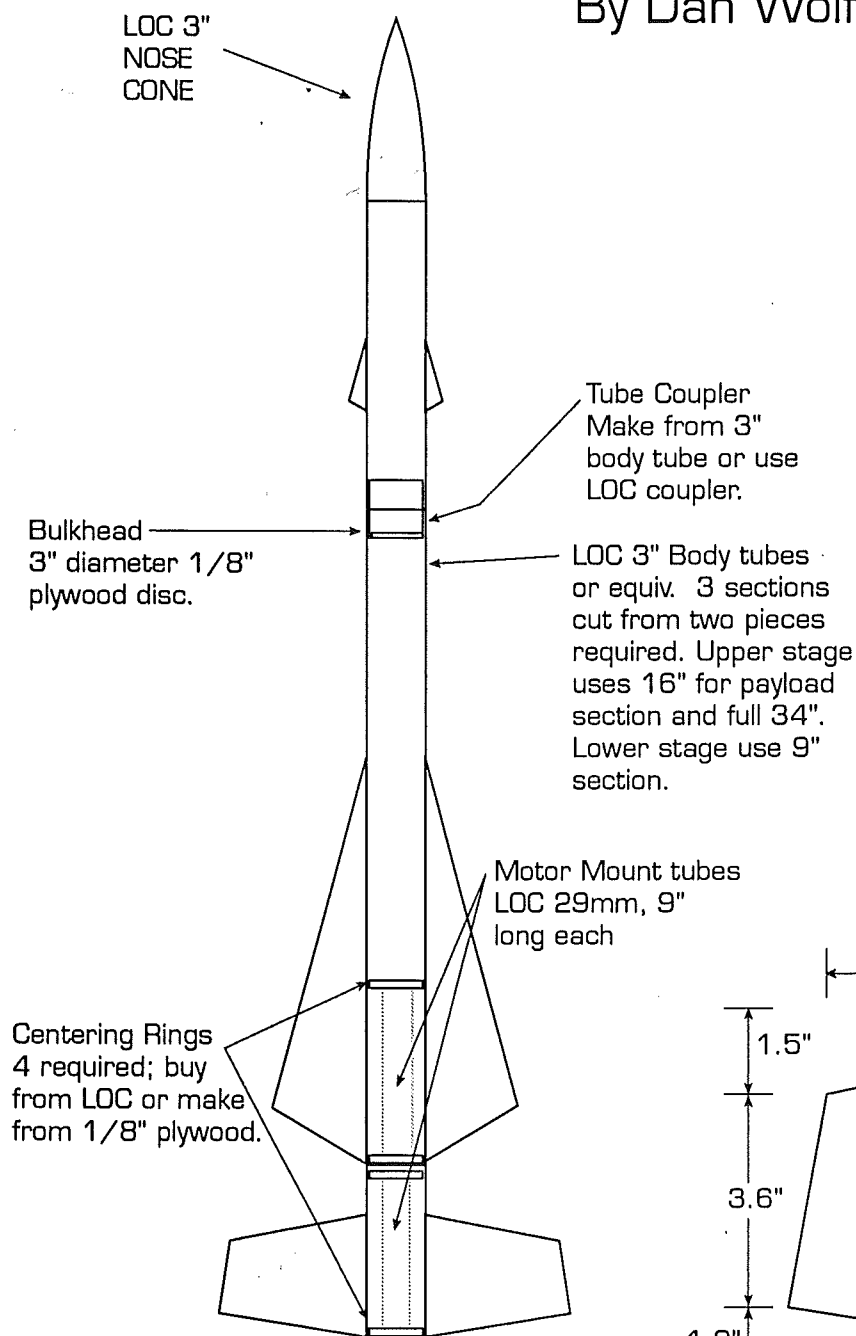
Upper Fin Template, Full Size.  
 Make in two sections as shown  
 (note grain dircetion) Make from  
 1/8" balsa, 4 fins required.



Coolant Vanes, Full Size.  
 Make from 1/8" balsa.  
 12 required.

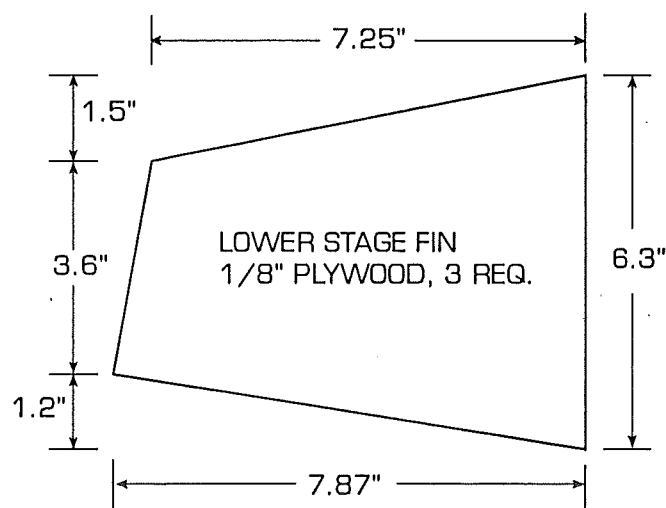
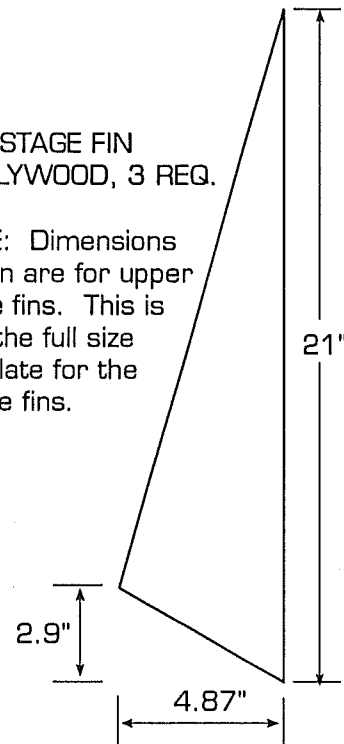
# STILETTO

SCALE-UP  
By Dan Wolf



UPPER STAGE FIN  
1/8" PLYWOOD, 3 REQ.

NOTE: Dimensions shown are for upper stage fins. This is also the full size template for the strake fins.



Note: Items not shown:  
Launch Lugs, 1/2".  
Stage coupling system:  
Use pieces of 3" tubing fit between fins.

## Club News

by Bill Owens

### October Meeting

MARS members Merrell Lane, Jeff Ryan, Dan Wolf, Patrick Finan, Bill Owens, Ray Lewis and John Viggiano attended the October meeting, which began with a screening of the latest rocketry video. It was recorded by Merrell from "America's Funniest Home Videos," and shows two men launching an "egglofter," ejecting the egg, and catching it in a frying pan. Nice diving catch, too! Merrell also brought a pair of very early flying plastic rockets, complete with mysterious bottles of 'fuel' and 'oxidizer'.

Official discussion started with the NARAM-37 logo, viewing Patrick's ideas. John suggested that the final design contain three items: a location graphic (Finger lakes, state outline), the event name and date, and a rocket (the Mars Lander was suggested)! Patrick will refine some of the designs he presented and bring them to the next NARAM committee meeting.

John announced that RIT is offering a first aid/CPR course, on four Thursday nights, with a tuition cost of \$25. Dan passed out minutes from the NARAM meeting in September, and asked once again that anyone interested in working on the committee contact him or come to the next NARAM meeting.

Jeff presented a very detailed and complete proposal for a new club launcher design. After discussion and refinement of some points, it was approved.

John requested contributions for the Upstate Rocketeer; remember, the club won the national trophy last year, so we have to keep up the pace!

John noted that several club committees have no chairs. After some discussion of the duties of each chair, volunteers were solicited and the following people appointed: Range Equipment Committee - Jeff Ryan; Program Committee - Dan Wolf; Newsletter - John Viggiano; NARAM - Dan Wolf; Membership and Publicity - Patrick Finan; Contest and Records - open.

Some good news on the regulatory front was announced, with details of the new FAA regs (see John's article in the newsletter). The club will celebrate on November 5th with a special launch at Parma Corners Park. On the same day, MARS members will help out with a rocket building class at Seymour Library in Brockport.

A new section has started in Erie, PA [*Blastoff*, #543 — Ed.], so there will now be three active NAR clubs within three hours of each other.

To finish up, Dan showed a stack of old pictures, which amused the members who had been around long enough to recognize people, and baffled those who entered the hobby more recently!

### October Sport Launch

Members of MARS were treated to a great day for rocketry on October 16. The wind was light, the temperature comfortable, and the sky sunny with broken clouds. This is a great year for fall foliage, and the flyers had a view of the spectacular trees bordering the field. Fortunately most of the rockets avoided them! There was a good turnout, including some members who haven't been able to attend the recent launches. As usual, we have some of the high-lights, but we can't recreate the great scenery or the fine weather . . . .

As usual, Dan Wolf had an assortment of big birds, including his Arreaux on an F25, Graduator on an F52, Thunderbolt on a G42 and perhaps the most daring flight of the day, an FSI EOS on the "steam engine" F7. Alas, the EOS hung up on the rod and decided to become an anti-submarine round. Thus was the drainage pond christened by MARS! Also as usual, Dan's daughters flew an assortment of rockets, all successfully.

Patrick Finan's Russian SAM made its debut, and his Warthog and Spam-Ram returned for more great flights, but his Tomcat suffered some glide problems. It seems like there's an art to building those right, and Ed Norris appears to have hit on it, as his flies reliably well. Ed also flew his ever-popular Cherokee D, and flew a Nike-Smoke drag race with John V. This was John's 100th flight for 1994, making him a member of the Century Club.

John's other flights included a flexi, which amazed the spectators: the classic comment was along the lines of "Aww, just another little one . . . whoa, look at that! It's a little glider!" He also flew the top stage of his Zenith Payloader, his Maniac and his scale IRIS.

Bill Owens loaded up his Big Red One with another E28 reload, and took advantage of the clear skies to take a couple of pictures with his Astrocum on C and D power. Unfortunately his '64 Malibu B glider boosted into the wind and made a valiant, but failed attempt to pull out before meeting the ground.

Mike O'Brien and his family launched a wide variety of rockets, but somehow it seemed that your reporter was always prepping back at his car when they went up! One memorable flight was of a kitbash model on an E15-7, but it was just one of many. Ralph Fagnoli had some launcher problems but flew a good number of birds, also with the accompaniment of his family. Ralph was also able to supply a ladder to assist with the recovery of one of Bud Piscini's rockets when it landed on the storage building roof; much easier than the usual 'long stick recovery!'

Bud's rocket was fortunately unharmed, but the top stage of his Microsonde was not so fortunate, and after a number of miraculously successful launches it disappeared



**CLASSY FLYERS** — One of the baker's dozen of class-built Alpha-IIIs lifting off during Bill and Jacquie Owens's rocketry workshop, 5 November in Clarkson. Photo by John Viggiano. >

into the woods. He also tried his hand at a Tomcat, and flew his sport scale Patriot and the ever-popular Maxi Alpha.

Andy Schecter flew his new "Cluster's Last Stand," for its maiden flight. This model burns a cluster of 4 Estes D12's for a very rapid takeoff! An onboard Adept altimeter registered an altitude of 1477 feet, and ejected the main 'chute at 250 feet for an easy recovery. Andy also had a good flight with an Aerotech Tomahawk on a G80, but his string of successful flights went down the toilet when the "Plunger from the Seventh Planet," (a plumber's helper modified to fly on Aerotech E30's) fell victim to a cat.

Remember, next month we can break out the big ones (at least, the bigger ones!) and fly under the new FAA rules. Parma Corners Park will never be the same . . .

### Workshop

MARS members Bill and Jacquie Owens, Dan Wolf and John Viggiano held a one-day rocketry workshop on November 5th in Clarkson. The workshop was sponsored by the Seymour Library in Brockport, where Jacquie works as the Young Adult librarian. Thirteen boys and girls attended, aged between 10 and 12, and each built an Estes Alpha III. The construction part of the program lasted just two hours, but all the rockets were put together quite well, and every one flew successfully. Some suffered from partial parachute deployment (the famed plastic wad recovery); with the high winds and small field this was something of an asset. One of the students came to the club's 'FAA-legal' launch later the same day, and we hope to see more of them at future club activities.

### Special Sport Launch Report

Who's afraid of a little rain? Not a MARS member. In celebration of the new FAA part 101 regulations, hardy

rocketeers braved the chill wind and light but steady rain on November 5th to fly big rockets.

Although the weather was enough to make anyone miserable, and there were a few mishaps, the mood was jovial all afternoon. Jay King christened the launch with his all-white LOC Graduator on a D12-3; not a spectacular flight, but just right for the wind speed. He reloaded it with a G40, but after seeing some of the other launches, he wisely decided to wait for another day.

Dan Wolf had some disappointing flights, starting with an apparent engine failure which badly damaged his Flying Crayon. The G80 seemed to burn through the forward bulkhead, causing the rocket to separate, and burning the motor mount. In the good spirit of the day, however, the Crayon's broken fins were pressed into service as standoffs for the other flights off Dan's pad! The Ticonderoga Pencil suffered a premature separation on another G80, and the maiden flight of his upscaled Stiletto on an F50 was cut short by what appeared to be a faulty delay.

Andy Schecter started the day with his Red-Headed Skyecker altimeter setup, which allows the rocket to fall most of the way on a streamer and deploy a parachute at low altitude, but it failed to arm on a D12-7 and recovered on the streamer alone. Moving up, Andy put an F50 in his Tomahawk for a nice flight, which had a tense moment at launch as the motor chuffed once and increased the rod tilt by ten degrees or so, then decided to take off. However, the greater tilt just meant a shorter walk on recovery.

John Viggiano brought out his repaired Pennsylvania Crude and it had a spectacular flight on a Rocketflite Silver Streak F, the perfect motor choice for a gray, overcast day. The rocket leapt off the pad in a great shower of sparks and continued to sparkle gently all the way to apogee.

Bill Owens kept things small with two semi-experimental flights, the first a converted Nerf foam rocket with a rear-ejecting mini engine mount in the tail and the second a CHAD-staged Alpha III (product of the workshop conducted earlier the day). The Nerf flew about as well as you'd expect for a rocket with high drag and little momentum (as Bud Piscini would say, 'A waste of black powder'), but the Alpha failed to stage and made an ungraceful prang. Both will live to fly again.

Dick Freed from Erie, PA was on hand to observe and fly a couple of rockets, starting with his beautiful upscaled Orbital Transport on a D. The glider separated well but the wind prevented it from circling, causing it instead to travel directly downwind and giving Dick a long walk across the park. He followed with an Estes E15 in a black and white LOC Graduator; the first motor from this pack had worked well, but this one did the classic E15 fireworks show. Fortunately the rocket was unharmed, though the spectators were startled.



Dan finally hit paydirt with his SPEV HP on yet another G80; the flight was faultless and the rocket almost vanished at apogee; in fact, it was observed to drift behind a small cloud on the long way back to earth. A fairly extensive search was required before Jay found it in the field beyond the trees. Didn't know there was a field there, did you? Neither did we!

Andy then flew his hopped-up, fiberglass reinforced Rocket R&D Brutus, named 'Et Tu, Brute,' on a G40-4, and the added weight showed with a low altitude but successful flight.

Jay also test flew a Shecter parasitic boost glider, which did well on a B engine despite the breeze.

Having returned from the search for Dan's rocket, John put his Thunderbore Jr. up on a G80-7; the flight was very nice with just a trifle too much delay. It seemed everyone on the field had G80's, but only 7 seconds or longer delay;

where's a range store when you need one?

With most of the spectators gone off to warmer places, but time still left on the FAA window, Andy talked Dan into letting him use not only a 29mm reload casing, but an H128 reload kit! After a quick prep while everyone else stood around and shivered, Et Tu Brute took to the skies again for a much more spectacular flight, the first H launch at Parma. Despite the higher impulse, recovery was made only a few steps away from the tennis court fence. Andy has now made it up the first two steps on the NAR certification ladder, and flew the last and probably most spectacular flights of the day.

With everyone damp and cold, the party broke up relatively early and all went their separate ways. Hopefully the weather will be better for the regular November launch, and of course we will again have FAA permission to fly the big birds so start epoxying! ➤

## The Maniac's Maniac

### Bill Owens, NAR 61063

In the weeks leading up to the Finger Lakes Fall Classic IV meet, held by MARS this September at the NARAM-37 field in Geneseo, I was madly building a Phantom 4000 to fly on a shiny new G80 motor for my first step on the NAR high power ladder. I was on schedule to complete the rocket a few days before the meet, and even had an F25 to test it with before the big flight. But I was a little worried that something might go wrong and prevent me from completing the 4000, and that would be the end of my high power aspirations for the year (this was, of course, before the wonderful new FAA rule change). So on my last order to Magnum I added an Estes Maniac, with some vague ideas about turning it into a cheap HPR-lite bird.

The conversion turned out to be almost trivial. Setting aside the supplied motor mount, cut a 19cm long piece of 29mm tubing (LOC MMT-1.14 or equivalent) and wrap it with four pieces of 25mm wide masking tape (spaced along the tube, so there is separation between the rings of tape). The length was chosen to accommodate all the Class C motors I know of, and the Class B H55 and H120. Increasing it to 23.5cm will allow the use of an H70 or the Vulcan H100, but given the difficulty of obtaining any of the H motors I didn't bother. When wrapping the masking tape, start flush with the forward end of the tube, make sure that it is very tight, and test fit each time you add a new piece to make sure the mount still slides in and out fairly easily. You may wish to leave 5mm or so of motor tube exposed at the tail to make it easier to tape the motor in.

Assemble the rocket as specified in the instructions, with the following suggested changes; use epoxy through-

out, preferably 30 minute, increase the shock cord length, and use a Stine or LOC style attachment (you will be adding weight to the nose cone). When the time comes to install the mount, place a generous amount of epoxy inside the body tube, and smear some more on the tape and on motor tube between the tape rings. Slide the tube in until the last tape ring is flush with the end of the body. Once the epoxy has set, finish the rocket and you're ready to fly!

Prepping is relatively simple, use tape around the nozzle end of the motor as a thrust ring and friction fit or tape it carefully (my maiden flight kicked the casing, though the 'chute did deploy). The supplied plastic parachute can be used, but I substituted a LOC 14" nylon model. A nylon streamer would be the best choice for soft fields. The motors I used were the F25-6 and the G40-10, and simulations show apogee altitudes of 936 meters (3070 feet) and 1197 meters (3930 feet), respectively (though the delay for the F is probably a bit short). Altitudes of around 1600 meters (5250 feet) should be attainable with an H55, if the airframe holds together! Some nose weight was added for the G40, and more would obviously be necessary for an H motor; the CG of a stock Maniac with an Estes E15 is about 7.5cm forward of the fins, or 60.5cm aft of the nose.

So what happened to that Phantom 4000? I did finish it in time, and the test flight on the F25 was great except for a rough landing which cracked a fin attachment. So the Maniac became a lifesaver, as well as something of a crowd pleaser; the flight card for the F25 launch has the comment, "Went REALLY far!", and the G40 flight disappeared entirely and was recovered the next day on the Geneseo State campus. Having survived the G40, the maniac's Maniac is now retired and occupies a place of honor in the rocket room. But if things change someday, and we can once again get H motors easily, who knows? ➤

## NARAM-37 Committee News

### Reported by Dan Wolf

The first official NARAM-37 committee meeting took place on September 27th. The first part of the meeting was spent reviewing the proposal, assigning unassigned tasks, and updating the committee on the progress to date. Then the meeting shifted to developing a logo for NARAM 37.

Several committee members presented ideas and it was decided that the "program" portion of the October MARS regular club meeting would be used to further review logo ideas and to finalize on a concept or design. At the October MARS meeting, Pat Finan brought along some nice full color logo ideas and the group decided on a variation of one of them. Pat is now in the process of laying out the final logo and he will present it for the committee's approval at the NARAM-37 committee meeting on October 28th. Pat also has arranged to have covers for a NARAM-37 program printed for free in four colors. The program will contain such information as the week long schedule, safety codes, ground rules, certified motors list, waiver table, participants list, maps, and general information on the area.

Other items discussed at the September meeting included the agreement between MARS and the NAR on

NARAM range equipment, housing, meeting rooms, the NARAM range store, local hobby store participation, fun events, publicity, and finances. After the meeting a revised version of the budget was sent to NAR Vice-President Trip Barber. Good news! This latest iteration of the budget has been approved. The other key outstanding issue with the NAR was in obtaining written permission from the site owner. Good news here too! We received the signed agreement from Mr. Wadsworth on October 20th. We have met all of the NAR's major concerns at this point. Now it's time to get down to work.

The section profile column on MARS has been submitted to *Sport Rocketry* and should appear in the February issue. The "Your Travel Agent Recommends . . ." article that will feature the museum, the college, Letchworth and other points of interest in the area will appear in the April issue. The idea is to use the articles as free publicity on MARS and NARAM-37. The April issue of *Sprockets* will have the NARAM-37 information sheet and application form. These items will be published in the magazine at no cost to us.

The October meeting of the NARAM-37 committee will be on Friday, October 28th. The November meeting is Friday, November 18th. If you would like to be part of the NARAM-37 planning, you are welcome to come. Meetings are at RIT Research Corporation and start at 7:00 PM.

➤

## Contest News

### '94-'95 Contest Schedule

Planned for the first half of 1995 are: The "States," NYSPACE '95, Regional Meet, 20-21 May; and Dumb Xtra Local, 11 June. Another road trip is planned for 29-30 April, to ECRM-XXII in Maryland. Of course, don't forget NARAM 37, National Meet, 22-28 July.

Here's a list of the ECRM events:

- 1/2A PD Multi Round
- 1/2A Altitude
- A B/G, Multi Round
- A Flexi, Multi Round
- C Eggloft Altitude
- Sport Scale
- Open Spot Landing

### Insurance Renewal

Regardless of the renewal date for your NAR membership, your insurance expires with your 1993 datebook. As NARAM host section, we are required to have a certificate of insurance, and that means five insured members. 1993 insurance doesn't count. Here's a New Year's Resolution that you can keep without having to worry about it all year

long: Resolve to be insured every day of 1995. To renew by credit card, all it takes is a phone call to NAR Headquarters (+1 - 800 - 262 - 4872) before you sing "Auld Lang Syne." (Well, call before you sing "Adeste Fidelis" just to be on the safe side.)

### MARS Point Standings

Top point-getter thus far is Jeff Ryan, ace competitor and all-around nice guy. With nearly 2000 points, he'll be hard to catch. As a section, MARS has 8240 points to our credit. This puts us solidly in the upper division. Way to go, Warriors!

Name	NAR	WF	Pts
1. Jeff Ryan	46148	5	1933
2. Dan Wolf	24516	3	1623
3. International Rescue Tm.	T-136	2	1576
4. John DeMar	52094	3	1299
5. Mike O'Brien		2	552
6. Ray Lewis	59002	2	440
7. Bill Owens	61063	2	232
8. Mike Borzumate		3	384
9. Mary Wolf	46379	3	201
10. Ferenc Róka	11077	2	90
11. Ed Norris	33196	2	76

➤

## Who Am I?

Last time we did this was two issues ago, in August. The "Who Am I" mystery member was Bud Piscini, and Dan Wolf guessed first. Nobody else guessed correctly. Here's this month's challenger, signing in now:

*My first rocket was an Estes Mosquito, and I first flew it in 1986. I don't really have a favorite kit, but this one holds a special place in my memory.*

*Of the kits available now, I like the Estes 1/100 Saturn Ib the best. My favorite scale model is one I scratch-built myself.*

*My favorite rocket engine is the E30.*

*My favorite competition event is 1/2A Parachute Duration,*

*and my least favorite is Boost Glide.*

*My favorite rocketry related book is G. Harry Stine's Handbook of Model Rocketry, 4th Edition. The thing I enjoy most about the hobby is the fire and smoke, and my proudest accomplishment was getting an R/G to work well at NARAM-35.*

*My biggest peeve about the hobby is the overregulation and bureaucracy we face. If I could change any one thing, I would like to have more products available from more manufacturers.*

*Who Am I?*

The first reader to notify John at 359-3869 wins a nifty prize. If you want to be featured in a future "Who Am I" and don't have a list of the questions, please see John. ➤

## Join MARS™ Today!

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Home Phone: \_\_\_\_\_ Work Phone: \_\_\_\_\_

Are you a member of the NAR? \_\_\_\_\_ If so, your membership number: \_\_\_\_\_

Please indicate the committee on which you would like to serve:

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Membership        | <input type="checkbox"/> Newsletter | <input type="checkbox"/> Club Programs          |
| <input type="checkbox"/> Contest & Records | <input type="checkbox"/> Equipment  | <input type="checkbox"/> Technical Publications |

Please check all areas of interest below:

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Amateur Radio      | <input type="checkbox"/> Electronics           | <input type="checkbox"/> Rocket Collectibles |
| <input type="checkbox"/> Boost Gliders      | <input type="checkbox"/> High Impulse Rocketry | <input type="checkbox"/> Scale Modeling      |
| <input type="checkbox"/> Building Workshops | <input type="checkbox"/> Photography           | <input type="checkbox"/> Social Events       |
| <input type="checkbox"/> Computers          | <input type="checkbox"/> Plastic Modeling      | <input type="checkbox"/> Video               |
| <input type="checkbox"/> Contests           | <input type="checkbox"/> Radio Control         | <input type="checkbox"/> Writing             |
| <input type="checkbox"/> Other _____        |  |  |

How did you hear about MARS? \_\_\_\_\_

Dues are \$10 per calendar year for adults, \$5 a year for Juniors / Leaders (under 18 years). Please make checks payable to: Ferenc Róka / MARS, and mail completed application to:

Patrick Finan, Membership Chair  
144 S. Fitzhugh Street, Apt. 5  
Rochester, NY 14608

or bring it to the next club function. Welcome to MARS!

## Upstate Rocketry Calendar of Events

Rocketry related events in the Upstate New York area, or of interest to rocket enthusiasts of this area, are listed below.

**18 November, NARAM Committee Meeting, 7:00PM**

Those who wish to be involved with NARAM-37 are invited to attend.

**20 November, Sport Launch, 2:00 PM**

Parma Corners Park, Route 259, Parma.

**13 December, MARS Club Meeting, 7:00 PM**

Regular club meeting. A volunteer is needed to run a program. Please contact John at 359-3869 to volunteer.

**1 January, Sport Launch, 2:00**

First Flights theme. Bring your new birds and christen 'em with style!

**10 January, MARS Club Meeting, 7:00 PM**

Regular club meeting. A volunteer is needed to run a program. Please contact John at 359-3869 to volunteer.

**15 January, Building Session, Time and Place TBA**

Have fun while getting ready for the flying season.

**24 January, NARAM Committee Meeting, 7:00PM**

Those who wish to be involved with NARAM-37 are invited to attend.

**17 February, MARS Club Meeting, 7:00 PM**

**19 February, Building Session, Time and Place TBA**

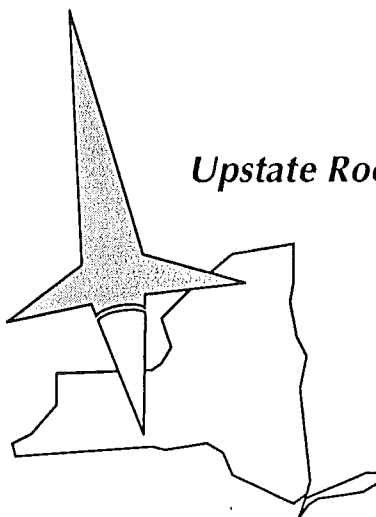
**22 - 28 July 1995, NARAM 37, Geneseo, NY, The Nats.**

Events: 1/2 A Altitude, 1/2 A Parachute Duration, A Boost Glide, A Flex Wing (Multi-Round), C Streamer, C Eggloft, D Super Roc, Giant Sport Scale (Div. B, C, T), Peanut Sport Scale (Div. A), Open Spot Landing, Research & Development. There will be a separate range just for sport flying. Join us for a week of rocket flying fun!

Contact: Dan Wolf, 458-3848.

MARS Meetings are normally held the 2nd Tuesday of the month at 7:00 PM at the RIT Research Corporation, 75 Highpower Road, Henrietta. MARS Sport Launches are normally on the 3rd Sunday of the month at 2:00 PM at Parma Corners Park, Route 259, Parma. Contact John Viggiano at 359 - 3869 for more information on these club functions.

*Upstate Rocketeer*  
c/o John Viggiano  
35 Mickens Bend  
West Henrietta, NY 14586



*Upstate Rocketeer*