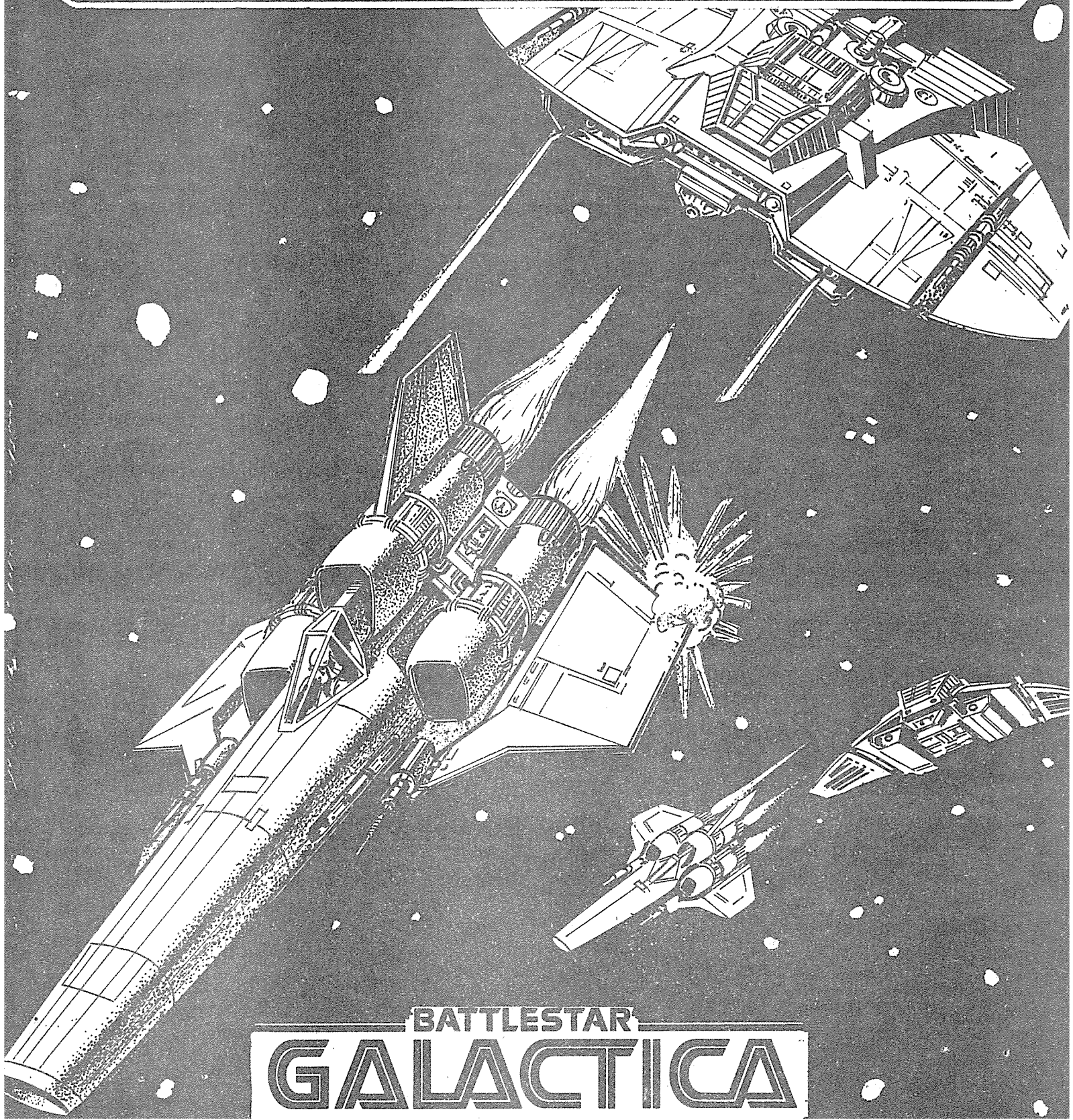


STAR NEWS



BATTLESTAR
GALACTICA

SNOAR NEWS

**"New Directions In Space
Modeling"**

**Volume 5
Number 1**

QUOTEABLE-QUOTE-OF-THE-MONTH

"Dual Eggloft is legalized man-slaughter."

-An anonymous member of the Pink Boc
Revision Committee

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Cover Story:

Shown on our cover is a Battlestar Galactica Colonial Viper about to be done in by a Cylon Raider. In this issue we feature conversion plans for the Monogram Colonial Viper, as well as other Battlestar Galactica goodies!

**Our Motto: If we didn't bitch,
who would?**

From your sometimes sober Editors:

Hi gang! It's those two wild and crazy newsletter editors back with another issue of SNOAR NEWS! This time of year is usually the doldrums of the modroc season, so to get your juices flowing, we're going to give you some tips on what to build for the warm months that the supposedly ahead. In this issue, plastic model mania reigns! The SNOAR NEWS staff has worked hard to put together a Battlestar Galactica section, complete with comprehensive plans for the Viper. Also, our honorary member from 'Bama, George Gassaway sends us his version of the MIG 2, and how to make it fly. There's no excuse for anyone not to be flying some converted models this year. They are fun, and besides, there's no sanding or sealing involved.

In upcoming issues, we hope to feature plans for some of the events we are planning to hold at upcoming meets. Already waiting for the next issue are plans for a small Hornet BG and (heaven help us!) a Hawk RG that is simple yet reliable. Also in the works are plans for a Eagle BG that'll knock your socks off, and some considerations for Condor BG.

We also plan to print some scale data, but this is going a little slower than planned. Basically, it is a lot harder to put together a good scale packet than other plans. Still, we've got some good ones, plus a bunch of other plans.

Throughout the year, we also plan to continue some of the features that have been so popular in the past year. The Bullsheets, Competition Comments, along with the famous 'Who will be #1. Competition Strategy, and Scale will be regularly seen in these pages. As well as what you send in, of course. Remember, our schedule is a little tighter this year, so we will be needing some more material than we had before.

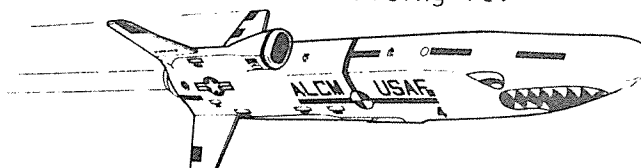
It is also time for getting the club ready for next year. Start bringing possible members to meetings to give them a taste of what's going on. It is our goal to have the membership roster increase by at least 50% in the next year, and the only way to do that is for each club member to go out and find prospective members. Why not share all that fun you've been having? Hobby shop handouts are available from these editorial offices.

Also, please pay your dues, and renew your subscriptions. Note the price increase of a subscription. It's not really an increase, just an adjustment to cover our increased publishing schedule. Before the price was \$3.00, for 6 (really 7) issues for a cost of \$0.50 per issue. Now the cost will be \$4.00 for 8 issues (probably 9), still \$0.50! Such a deal! By the way, thanks to all of you out there for subscribing. We are proud to bring you the finest in modroc publications and glad that you have been so supportive of our efforts. Thanks guys!

Well, that's about it for now. Until the next lawsuit, keep 'em flying!

Norton Freak and The Man of Steele

SNOAR NEWS, a product of the Suburban Northern Ohio Association of Rocketry, springs from the private sea, and is published (in spite of Excedrin headache #1) every six weeks. Subscription rates are \$4.00 per year (such a deal!). Inquire elsewhere in this issue to mailing address. Entire contents is Copyright © 1979 by SNOAR NEWS. World and Hyperspatial rights reserved. All uncredited item herein, having that naive country-boy tone, were penned by the editors. Please address all articles, bequests, bribes, propositions, ect., to 2888 Station Road, Medina, Ohio, 44125. Inquire to where subpoenas may be most readily served. Contributions to the SNOAR legal defense fund are now being accepted. That's about all small print fans! I am glad that you are reading this....after all, I went to the trouble of writing it!



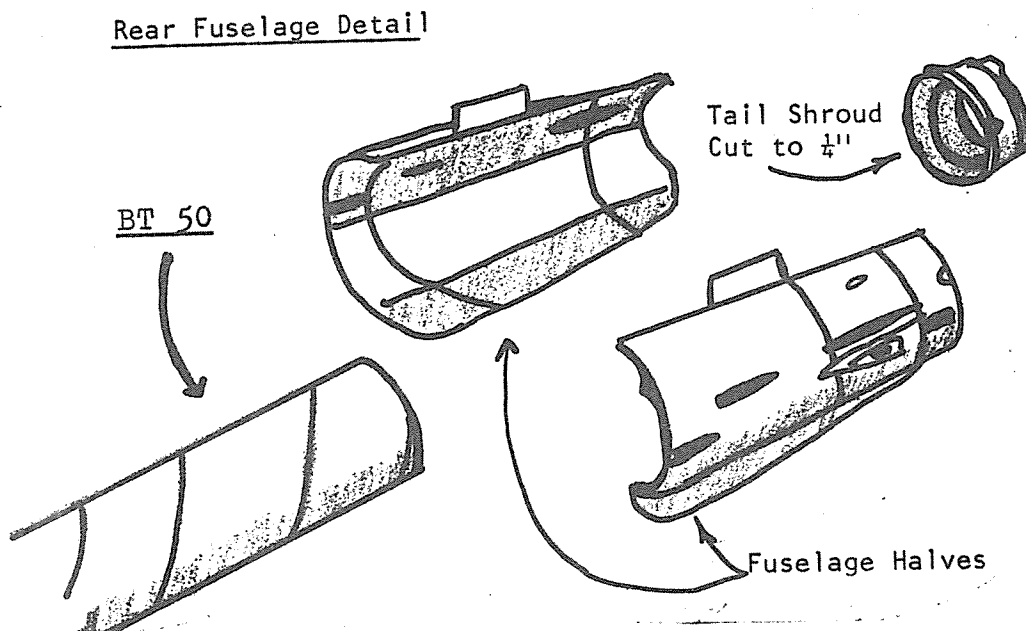
MIG-21PF

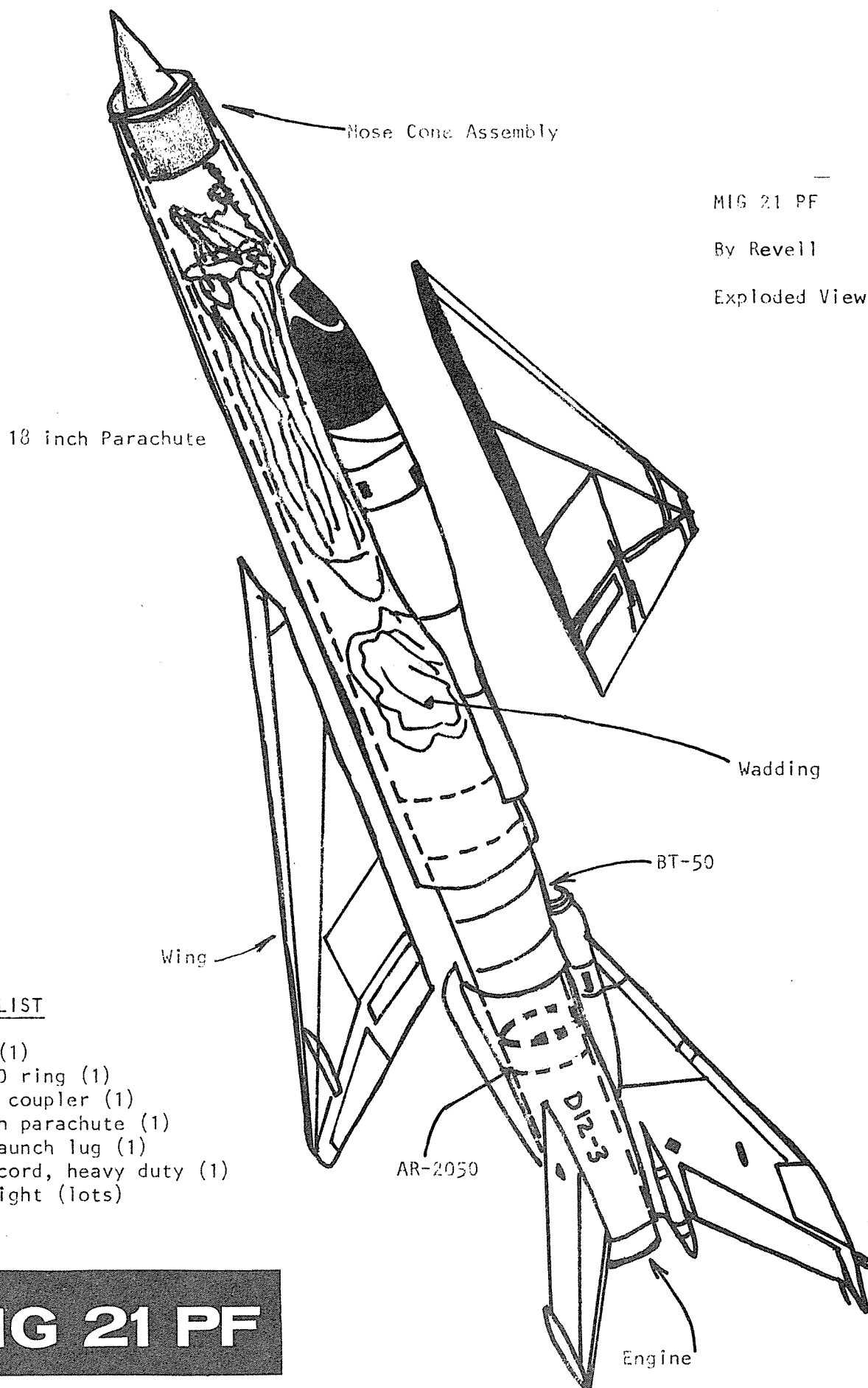
By George Gassaway

The Revell 1/32 MIG 21 kit is one of the several relatively new plastic model jets that are large enough to convert easily and needs no extra fins for stability. The MIG 21 is about the easiest to convert of the series, yet it is a sharp model, and one to score a fair share of points.

Basically, to convert the MIG 21, the idea is to run a BT-50 straight through the model. Be careful when cutting away the plastic to make the BT-50 fit; it is not hard to do, and a good job will add workmanship points, as well as pride. Take the forward fuselage halves and cut away the internal landing gear bays so that the BT-50 will fit into the fuselage. Also, cut away the inside rims near the nose (where the intake nose cone is supposed to be mounted), so that the BT-50 will fit all the way into the front of the fuselage. Locate the tail shroud (exhaust nozzle). The BT-50 tubing fits into the inside but not all the way through. Take a razor saw and cut the end of the shroud away until it is only 1/4 inch long. The BT-50 should fit perfectly now. If not, sand the inside of the shroud until it does. Look at the model's internal parts. It should be possible to make the inside of the cockpit look almost normal, though the BT-50 really leaves little room for this. If it looks like too much work, simply paint the inside of the canopy flat black. Discard the other internal parts (the turbojet bulkhead and engine), then assemble the fuselage halves (front and rear), omitting all internal parts. Do not glue the nose cone in place, but set it aside for later use.

Cut a length of BT-50 to $14\frac{1}{2}$ inches. The tube should then be flush with both ends of the fuselage. Glue or epoxy an AR-2050 ring $2\frac{1}{4}$ inches inside the rear of the BT-50. Also, install a securely mounted internal shock cord to the BT-50. Glue the BT-50 into the fuselage, using any of several types of adhesives. Plastic cement, Ambroid, contact cement or cyanoacrylate can be used, though be careful when using any of the first three, as excessive use will melt the plastic. Just make sure the shock cord comes out the front and not the rear of the model. Assemble the rest of the model following kit instructions.





MIG 21 PF

By Revell

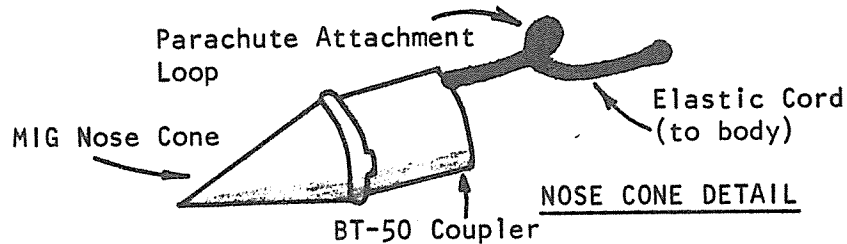
Exploded View

PARTS LIST

BT-50 (1)
AR-2050 ring (1)
JTC-50 coupler (1)
18 inch parachute (1)
3/16 launch lug (1)
Shock cord, heavy duty (1)
Noseweight (lots)

MIG 21 PF

The last part of the conversion deals with the nose and recovery system installation. Glue a BT-50 stage coupler to the nose cone, and attach the shock cord, the nose cone needs some weight added to make it stable. Insert a live D12-3 into the rear of the model and stuff some wadding and an 18 inch chute into the front. Add enough nose weight to move the balance point no less than $8\frac{1}{4}$ inches from the front of the fuselage (at least $6\frac{1}{4}$ inches from the tail). Put the nose weight inside the coupler and seal with epoxy. Be sure the model balances at least as far forward as indicated. Attach a $3/16$ inch launch lug under a wing at the wing/fuselage joint.



Attach an 18 inch plastic chute to the nose. It will fit easily, as well as larger $1/2$ mil mylar chutes, if desired. A good idea would be to reinforce the chute by running the shroud lines over the top of the chute and attaching the lines with adhesive mylar. This will prevent the shroud lines from popping off.

Paint work is where it is possible to make even a simple model like this look like a winner. Either the Russian or North Vietnam paint scheme can be used; neither is going to look too friendly. Pay attention to details, as the kit instructions are very good about indicating the various parts' colors. Panel detail can also be accentuated. For more info on how to paint and detail the model, consult a plastic model plane handbook.

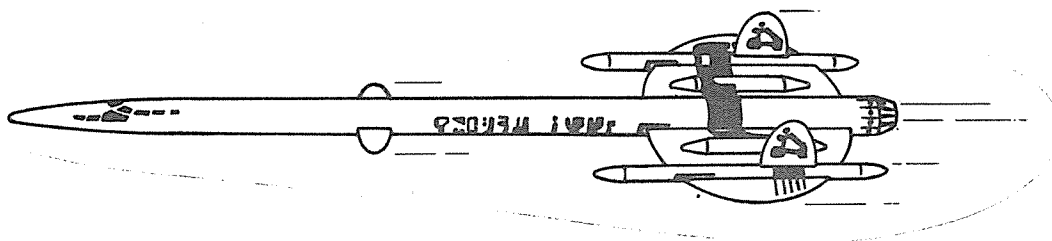
The MIG 21 PF is now ready to fly! The bird flies straight up on a D12-3 to a respectable altitude, and an 18 inch chute allows for adequate recovery. It's pretty reliable for a plastic model, and a great first time conversion. Try one today and join the ranks of such communist bloc countries as Cuba, East Germany and North Korea in enjoying one of the finest fighters the Russians have to offer!

AN APOLOGY:

In past issues of SNOAR NEWS, we at this time believe that we have taken G. Harry Stine, both in name and in reputation, over the coals unfairly. Because of this, we now offer this apology:

At this time, we formally apologize to G. Harry Stine, his family and the VAL*SUN section for the articles which appeared in the past two issues of SNOAR NEWS. This includes any unwarranted references and/or criticisms leveled at him, his family, or the VAL*SUN section, either by word of mouth or in articles published in SNOAR NEWS.

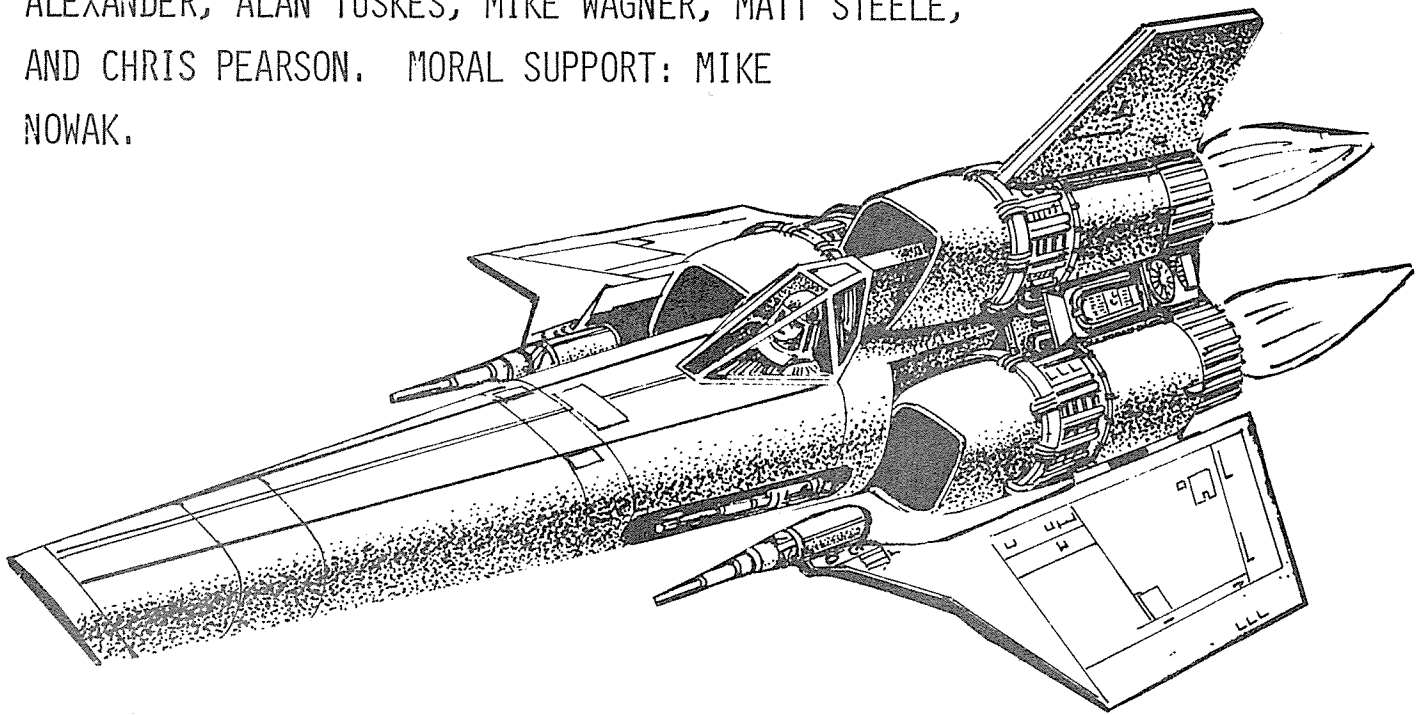
We will cease any further criticism of G. Harry Stine, his family or the VAL*SUN section, in future sections of SNOAR NEWS.



BATTLESTAR GALACTICA

SNOAR NEWS PRESENTS A COMPREHENSIVE REVIEW OF ONE OF THE BEST SCIENCE-FICTION SHOWS ON THE TUBE SINCE STAR TREK (IN SPITE OF WHAT THE MODEL ROCKETEER SAYS): BATTLESTAR GALACTICA!

BATTLESTAR GALACTICA SECTION COMPILED BY SNOAR NEWS STAFF: JOHN ALEXANDER, ALAN TUSKES, MIKE WAGNER, MATT STEELE, AND CHRIS PEARSON. MORAL SUPPORT: MIKE NOWAK.



ABOVE: COLONIAL VIPER IN ACTION!

From TV's **BATTLESTAR GALACTICA**

VIPER

Space Fighter

MONOGRAM

VIPER

By Matt Steele

The Monogram Colonial Viper is an excellent plastic model kit that lends itself to a number of conversion methods. It has above average detailing, yet has a basically stable configuration. There are two basic ways of doing the model; the easy way and the advanced. Both ways will be described in detail in this article.

BASIC CONVERSION: This conversion is similar to the one outlined in the Model Rocketeer, though some additional information may make the conversion a bit easier. John Alexander has built two models with the front ejection method and is working on a third. He has had marginal success with the models, having one destroy itself in a freak accident (see SNOAR NEWS V4N7, Bullshead) and the other place first in Plastic Model at Munchkin 3, though at Munchkin, the stability left something to be desired. The basic problem with the nose ejection type configuration is that it is difficult to get enough weight in the nose to fly well in any amount of wind. About 1 1/2 ounces of nose weight is recommended, and it gets tricky to stuff that much lead into the small nose. John recommends substituting an engine casing about 1 1/2 inches long for the BT-20 coupler. This allows much more room for nose weight, and helps to prevent the Lovelace effect, which can be a problem with so much nose weight. Disregard the Rocketeers instructions about noseweight, as it is very doubtful that two pennies and clay will make the model fly properly in anything but dead calm conditions. It's always nice to be on the safe side, and the C5 engine will handle the extra weight just fine. Mount the shock cord very securely in the model, it is a step that is often overlooked. Use elastic cord (anyone who even attempts using rubber should be executed by the Cylons) and mount the cord by slitting the body tube and threading it through. Since the tube is internal, it won't show and will hold things together well. Also, ignore the directions for installing the launch lug, it's so much easier to just place two 3/4 inch lugs on the underside track of the Viper. There's no standoff required, and the tracks align the lugs perfectly, so there's no need to 'eyeball' the lugs. John also suggests gluing the intake parts onto the main body, and then cutting away the excess plastic. This strengthens the parts of the intake and is just as easy to do. If a Dremel is available, this is the only way to go. Furthermore, take the time to add an engine hook to the model; it's the only way to be safe.

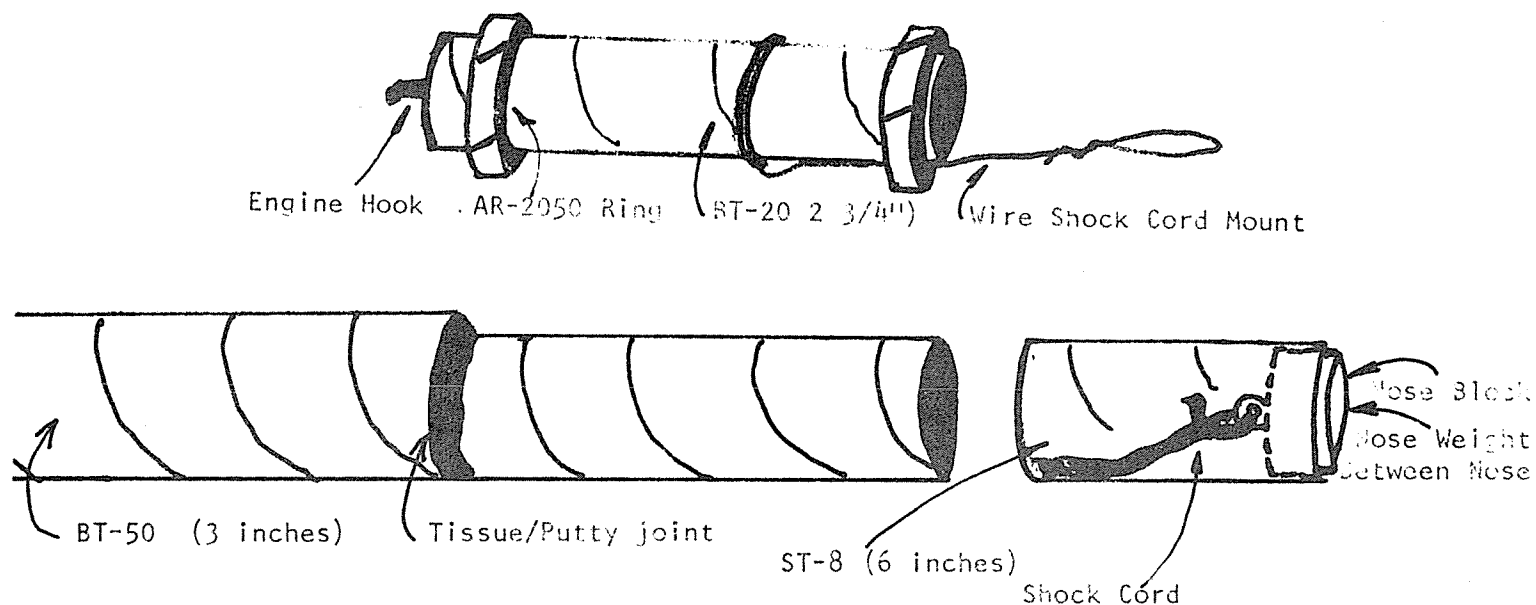
The basic conversion is a good reliable way to go, though the nose section may cause problems. One solution to this problem was exhibited by Dave Wolf's Viper that took first place in A Division at Munchkin 3. Dave glued the nose piece on, and cut the model apart just in front of the cockpit. He did an excellent job of cutting the break line and it was barely visible. Dave was then able to place a good amount of nose weight in the model, and was able to get a beautiful flight in somewhat brisk winds. If the nose ejection approach seems bothersome (the coupler or casing is somewhat hard to align properly), this way might be better. Parachute space is about the same, since a BT-50 is used as the main tube instead of a BT-20. No chute problems were encountered by the model during its flights at Munchkin.

If the basic conversion method is chosen, work carefully on the model so as to minimize mistakes that would be quite obvious on an otherwise simple model. The basic conversion is great for sport flying, and for first time plastic modelers. However, if more is desired, read on about the advanced version.

ADVANCED VERSION: The basic problem with the Viper as a competitive plastic model kit is its lack of parts, as there are only 18 in the entire kit, and some of those are discarded. In order to gain a little in the difficulty department, some things will have to be added to enhance the model.

There are three ways of doing this to the Viper and still have it remain fairly authentic.

The first way is to increase the difficulty, and yet not detract from the model is to construct the model to rear eject. Rear ejection protects the rear of the model rather nicely, and solves a lot of problems described in the basic model without having to cut or scrimp on nose weight. The rear ejection model uses a staggered tube technique reminiscent of the Pan Am Space Clipper, though applied a little differently. A BT-50 is inserted into the rear of the model. The tube fits rather nicely between the turbos without leaving any garbage hanging in the middle of nowhere. Inside the BT-50 is a standard BT50/BT20 engine mount, though not glued in, instead it slips out. Attached to the engine mount is a music wire shock cord mount. An ST-8 tube is placed within the forward body of the Viper. This houses the chute and noseweight. The BT-50 and the ST-8 are joined by a masking tape/tissue putty joint so that no ejection gasses are allowed to escape. The basic planform can be illustrated in Figure 3. This method of rear ejection allows for a good sized chute to be used, and yet adequate nose weight can still be installed.

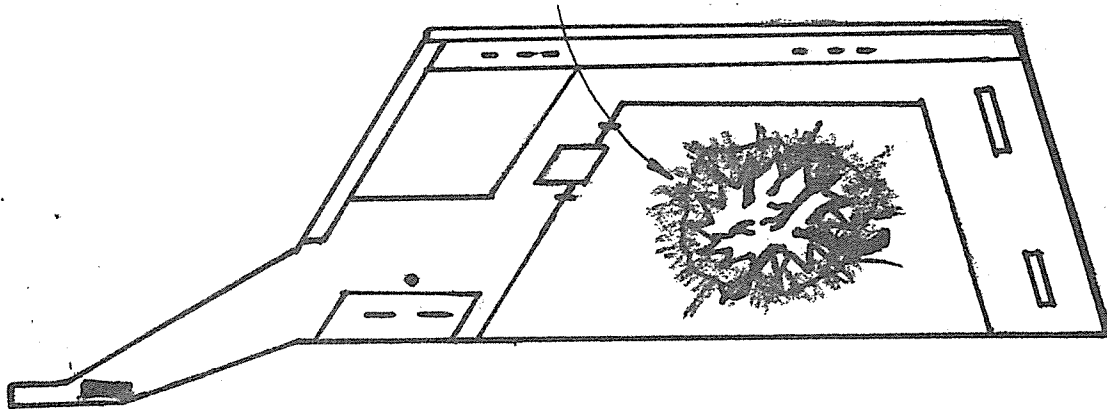
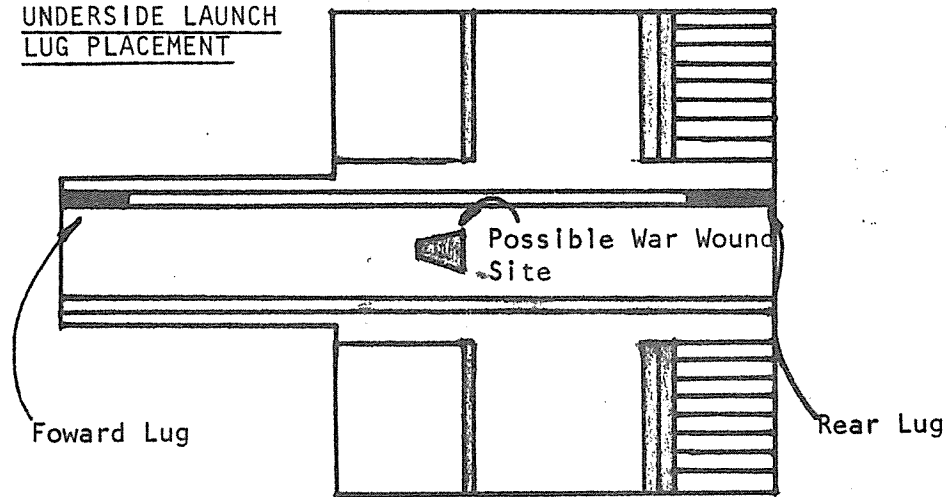


The second way to enhance the model is the 'war wound' or 'battle scar' method. This technique is popular among advanced tank (TANK!) and airplane plastic modelers. It is easy to do, but try practicing on the display stand before torching the model or it could be back to the hobby store to purchase another kit. Take either a candle or a butane lighter and torch the area to be hit until it is soft. Then take a dowel and poke the soft plastic tearing the edges and making the whole thing look like a real hit. With some practice, some super results can appear. Don't make the holes too big, though and limit them to about 2 or 3 per model (if the sucker has been hit more than that, it is probably just a piece of junk).

Then, to really touch it off, find small pieces of tubing and wire from various other kits (1/16 car kits are great). Burn the edges of the parts, and then arrange them so that it appears as though the 'inner workings' of the bird have been hit. Prime target areas on the Viper are in the wing, bottom of the model where the missile trigger is, and near the cockpit area. This can be done with not too much work, but the effect is devastating. One significant model that had this styling was the Bundick/Justis Klingon ship of NARAM-18 fame. It pranged, and added a few more realistic details to the model.

Paint work is the last way to make the Viper look sharp, and the Monogram mold makers went out of their way to make it very easy to do a good job. The turbos are just loaded with details to paint in hundreds of ways. Probably the best color for the model is flat white, which is the true color of the ship, not grey. It is much sharper than grey, and accentuates the decals and detailed paint work, as well as the laser blasts. Orange is good color for most of the detailing, and blue or black will contrast nicely.

UNDERSIDE LAUNCH LUG PLACEMENT



Tubing and pipes can be silver or bronze, while the turbos can be a 'glowing' florescent red or orange. The laser marks can be simulated by powdered graphite or by taking the lighter and actually burning it. If the lighter method is used, spray the areas with Krylon Clear to keep the marks from smearing. The lines on the model can be brought out by carefully scraping the white paint off the lines to expose the grey plastic underneath. Unfortunately, the lines on the Viper are convex (unlike the MPC X-Wing) so that detailing the panels by the capillary action can't be used. The biggest thing with painting the Viper is your imagination!

A C5-3 is a good power plant for the model, so the temptation to use a D12 is written off in all but the worst of cases (like Woody Woo!). The Monogram Colonial Viper offers something for both the beginning plastic modeler and the expert. So there's no excuse for anyone not to have a plastic model that works. May the force be with you. Whoops! Wrong Sci-Fi show! Never mind!

Hot Flash!

Well, it looks like democracy does work sometimes....It seems imminent that the new DOT legislation on the propellant limits will soon be put into effect. The new proposals will upgrade the amount of perchlorate propellant allowable under Class C explosives shipping to 62.5 grams per engine, and will allow the shipping of up to 25 pounds of engines per package.

Well, it now looks like FSI can get back into production of their E60, F7 and F100 engines, and SSRS and Composite Dynamics can ship their engines without fear of massive government intervention.



Products Review

Estes managed to get the Viper and Laser Torpedo kits out just in time for the tail end of the Christmas season. Both kits are packed in attractive boxes, with bright lettering and illustrations. These two kits are scheduled to be complimented by the Cylon Raider kit (only god knows how they are going to make that stable!) to complete the Estes Battlestar Galactica line.

The first thing one notices about the Viper kit is that it looks a little out of proportion. The second thing that hits is a cheap shot, that is the price. The initial feeling upon opening the box is "I hope I didn't shell out 7 smackers for the box...". After rumaging through the parts, it becomes obvious that you did. Really, though, the kit is nice; it's just that we have all been spoiled by the Monogram Viper. Considering what the Estes guys had to work with, it's not really a bad job. The main body is a BT-50 with 3 BT-52's as the turbo tubes. A jig is included to glue the turbo tubes together, and it goes a long way in simplifying construction. The fins are die cut balsa, and the nose cone is a plastic number with an indentation to slice to achieve the proper effect. Not too scale, but practical, I guess. The laser guns aren't too scale either, being built up from various little tubes. To make the thing fly, there are four (count 'em) nose cone weights in the open nose, held on by a cord. And the NAR is worried about single payloaders, huh? The most surprising part of the kit is the cockpit, which is a bitch to put together, though it looks so simple. Take care when building it. The kit's redeeming factor is that it is easy to paint, and the stickers included really dress up the model. The Estes version should fly quite a bit better than the Monogram version, but then Estes is into flying kits, aren't they? Still, for demos and such, the Estes Viper is more than adequate.

The 'Laser Torpedo' is just another rip-off of the Photon Torpedo (alias Star Trek and Challenger starter kits), except for a new nose cone. Nuff said.

Overall, the Estes Kit is a bit of a disappointment to the purist, especially after the super job that they did with the Star Wars line, but for people who just like to fly rockets, and have lotsa bucks, it will fight off the Cylons anytime.

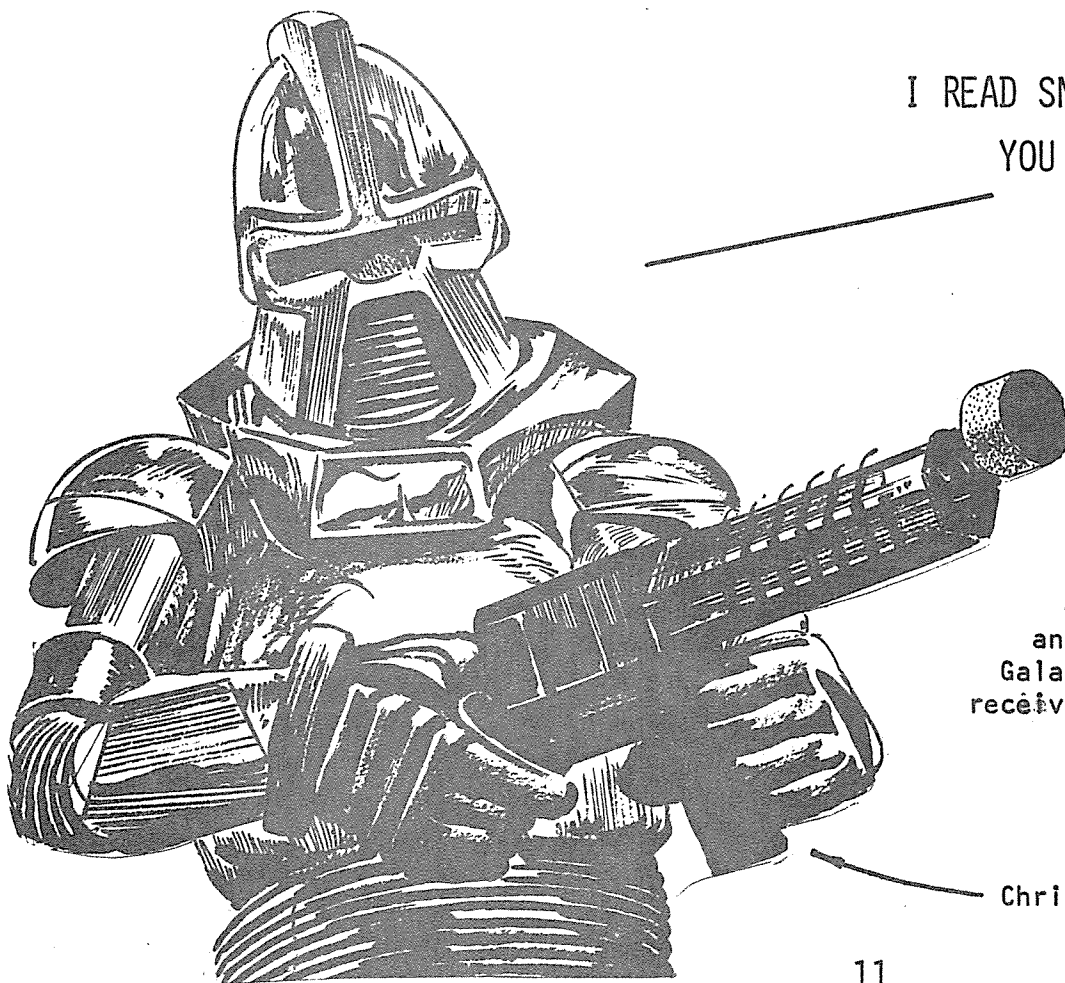
MONOGRAM CYLON RAIDER AND COLONIAL VIPER PLASTIC KITS

The Cylon Raider is the sister ship in Monogram's Battlestar Galactica fleet to the Viper. Opening the box gives you one nice first impression....that is that this turkey is BIG! It measures something like 8 inches long by 10½ inches wide. The detailing is excellent, and is guaranteed to scare any human into submission. The model is also heavy, so any thought of conversion will have to conjure up dreams of at least 20 newton seconds of smoke and fire. About the only way to convert the model would be to add a long pod (ala Estes Enterprise), or god forbid, place two engines in the power ducts, and add some swept back fins (really swept back!). It has to be a challenge, as our resident plastic model madman Alan Tuskes is almost scarred at the thought of converting it. If converting it isn't in the stars, at least it is a model that looks good sitting on the shelf. The Raider should be painted some sinister color similar to the grey it is molded in to achieve the proper effects. This is a good model for the price, about the same as the Viper, and a good addition to anyone's static space collection.

As far as space models go, the Monogram Viper is near the top of the line. The detailing is some of the best ever seen on a space model yet, but it is not hard to accentuate. The model is relatively easy to put together, and should not take more than a good afternoon to assemble. The parts fit together suprisingly well, and seam lines are practically non-existent. The directions leave a little to be desired, being based on the 'one picture is worth a thousand words' principle. Also, the decals are nice, but are scarce. Not even a nameplate decal for the hideous display stand. Other than that, the Viper is a excellent kit, and is available for a suprisingly low cost. The Viper is a good kit to own, even if plastic model conversion is not your thing. It even looks good sitting on the shelf!

Just In!

News from our west coast source tells us that Small Sounding Rocket Systems is going to bring out some new goodies! With the imminent exemptions for engines coming up, Mark Mayle tells us that the first full F engine, the F60 will then be available! He plans to downgrade the F50 to a E43, and continue production of the E30. Tenative plans for a short burn F are in the works, a full 80 newton-second motor, the F85. Also, plans are being made for a longer burn E and F engine, with a duration of between 2-2.5 seconds, and being in the E16-20 range. Now the bad news! The price of engines is going up (did you ever hear of anything going down?). The price of the E30 engine will go to \$4.50 and the price of the F50 engine will rise to \$5.50.



I READ SNOAR NEWS, AND
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Medina, Ohio 44256

Chris Johnston, Cylon spy and former
SNOAR Imperious Leader!

Important stuff...

It looks like the Texas Spacemodeling Association (a coalition of Texas sections) has had their bid to hold NARAM-21 accepted. It has been nine years since a NARAM has been down that way, the last being the unbearably hot and quite large NARAM-12. The Contest Director will be Rob Justis. While the past few NARAM's have had a lot of hoopla and little else, it looks like the Texans might be able to pull off the best NARAM since the NARAM of gigantically mutated trophies, NARAM-18.

Update:

- February 24, Saturday Meeting, Garfield Hts. Library. Swap session. Bring what you like to unload and let some other sucker take it home! A guaranteed fun time for all!
- March 24, Saturday Meeting, Garfield Hts. Library. Another thrilling meeting featuring nothing in particular.
- April 28, Saturday Meeting, Garfield Hts. Library. Bring your Scale models for a static judging session. Plastic Models too! Learn how to judge them yourself.
- May 19-20, 1979 Great Lakes Regional Meet '79, Medina, Ohio. Events: Scale, Plastic Model, Sparrow BG, Sparrow RG, Hawk BG, Class 0 PD, Class 2 SD, Predicted Altitude, Dual Payload, Robin Eggloft, Open Spot Landing.
- Some time in May NOMID-'79, Michigan. Events: Class 00PD, Class 3 PD with egg, Swift BG, Sparrow RG, Swift RG, Hawk BG, Eagle BG, Plastic Model, Class 3 SD, Class 1 HD, Open Spot Landing.
- June 9-10, 1979 Buckeye Regional Meet, Medina, Ohio. Events: Space Systems (Gasp!) Hornet BG, Sparrow RG, Class 4 HD, Class 0 PD, Class 2 SD, Predicted Altitude, Gemini Dual Eggloft, Mammoth Super-Roc, Class 0 Parachute Spot Landing.
- June 23-24, 1979 MMRR-'79, Medina, Ohio. Events: Class 3 Scale Altitude, Hornet BG, Eagle BG, Hawk RG, Class 1 PD, Class 3 SD, Mercury Dual Eggloft, Monster Super-Roc, Plastic Model, Open Spot Landing.
- August 5-10, 1979 NARAM-21, Houston Texas. Tentative Events: Class 0 PD, Hornet BG, Class 1 HD, Sparrow RG, Class 2 SD, Dinosaur Super-Roc, Pigeon Eggloft, Mercury Dual Eggloft, Predicted Altitude, Scale, R & D. Single Payload and/or Class 3 Scale Altitude may be added or substituted.

Also, look for something-of-MAR on June 16-17, Wapokoneta on July 22, and lots of demos

The Dreaded Space Filler!!

SNOAR Tee-Shirts are now available to whomever wants them. You do not have to be a member of SNOAR to wear one of these striking yellow masterpieces. Gain fame, impress your friends, be a target for snipers and amoke boost-gliders. Send just \$5.00 to Chris Pearson, 37541 Grove Ave. #202, Willoughby, Ohio, 44094, and you will have your very own piece of history.

Bullsheet ...

Exclusive !!!

* News from the HIAA Trade Show. Our secret manufacturer source recently visited the members-of-the-industry-only HIAA Trade Show, and brought back tons of goodies and lots of information. Estes will re-introduce the Camroc, renamed the Astrocam 110, along with the new Delta 2 launch vehicle, available April 15. The camera takes a mini-cartridge of Kodacolor 110 color print film, ASA 400. Shutter speed is 1/1000th of a second, and it will take one shot per flight. Length is 6.5 inches and weight loaded is 1.76 ounces. The launch vehicle is single stage and uses a C6-7 for flight. Don't go screaming to get one of these babies, though, the one that was at the show was a aluminum mock up. Believe it or not, the Cylon Raider will be available July 1. Don't ask me how they got it to fly, because the flight conversion was not at the show. Talk about spin-offs! The Maxi-Alpha 3 has been born. Plastic fins and all. You can put one of these babies together in 30 minutes! We know! We did it. No painting is required, and many decals are included in the kit. First came the Maxi-Alpha, and now comes the Colossus! Over four feet tall, made of BT-80, featuring the same plastic fins. D12 powered, this should make an impressive demo model. You'll think twice about buying one though, the price is \$17.00! Estes has added many new kits to their line up, too many to tell about here, but some of them are very nice sport models.

Centuri is out of the newspaper business folks! That's right, they have gone back to the old style book catalog, with many pages in full color. I myself like this style much better, as it is much easier to read and store, and does not fall apart as easy. Their line up is pretty much as before, with the exception of the 'Buck Rogers in the 25th Century' line up. There are three kits in this line, the Laser Lance, which is supposedly a replica of the interceptor missiles used in the movie (ala Photon Torpedo), and the Draconian Marauder and Earth Force Starfighter. These are two bitchin' looking kits that are almost too beautiful to fly. Availability for the Laser Lance is February 28, and April 15 for the Marauder and Starfighter. The Lance is also available in a starter kit. They have also included a flight manual in the catalog, which looks a lot like the old Estes 'Yellow Pages' of years past. They include construction tips, plans and procedures. A nice touch! The Flying Saucer Alien Scoutship is now available in a starter kit too. I remember when the only starter kits you could get were the Estes WAC Corporal and the Centuri Javelin. Times sure have changed! Remember the Estes Electro-Launch? That @#%&! probably caused more people to quit the hobby than anything else! The Big Foot has replaced the old Porta-Pad, which has mysteriously moved and renamed itself the Power Tower.

* Some notes from out West include the results from NARWIN-2. Section champs VAL*SUN scored 1068 points, so that keeps SNOAR ahead with 1110 points. There were 36 people at NARWIN, down quite a bit from last year. Jim Pomment, a former Internat's competitor, has returned with a vengeance, cleaning up in his gliders. Jim set 2 new national records, one in Sparrow RG (184 seconds) and Swift RG (224 seconds). Mark Mayhle of Small Sounding Rocket Systems plans to down grade the F50 to an E46 when it becomes legal to ship full F's. (Thanks to the GLAR Gazette for the above items.)

* The Midwest Region is alive and thriving! As of 8/1/78, the 11 sections in the Midwest Region were second to the Southland's 16 sections. Not too shabby! Section growth is on the rise, partially thanks to the new '5 man rule'. As of November, NAR sections were up to 66 active ones, an all time high for the past few years. Projections for even more growth look good too!

* The NAR Publication Committee is preparing a series of BG and RG plans to be sold through your local NARTS. Eventually, a series of Ten plans are anticipated, covering the entire power range. Scheduled plan number one is the popular 'Bumble Bee' Hornet BG. Coming to NARTS soon!

* The final points totals are in, and SNOAR fared well, as suspected. For SNOAR members, they are as follows: PS'N Team, 1745, #1, John Squirek, 1093, #3, but Reserve Champ, Frank Peri, 740, #4, Brad Bowers, 726, #5, MF Team, 474, #7, Mark Volpe, 550, #9, Bob Ferrante, 352, #15, John Alexander, 403, #15, Wolfram Von Kiparski, 248, #19. Congratulations to all of the above. And to those who came out to our meets and flew againstus.

* Class 3 PD with an egg turned out to be quite an interesting event at both Daughter of Mar and Munchkin 3. It is also on the schedule for the upcoming NOMID-79. A few people learned what parachute materials will take the shock of an egg, (plastic or nylon) and what won't ($\frac{1}{4}$ mylar). The event keeps the models' altitude down and visibility up. Besides, it's different to fly eggloft and not have to worry about breaking the egg!

* The NAR Bylaws Revision Committee needs you! If you have any suggestions or revisions, send them today to Tom Hoelle, 2009 Emma Ave., Fort Wayne, IN, 46808. First ten lucky revisionists will receive an autographed piece of Steve Behrends' shirt.

* Dr. Gerald Gregorek has stepped down as NAR Vice-President and Trustee. Apparently, Dr. G's workload is just too much for his NAR responsibilities. Sorry to see him go, but let it be known that he will be active in helping with the 1980 Internats. Jay Apt has been appointed to Dr. G's Trustee position, and Mark (Bunny) Bundick is the new VP. Good luck to all!

* The NAR will be advertising in Popular Science again, this time for the months of January, February, and March. The measly profits from NARAM-20 (\$132.00) plus a healthy advance from NARTREK provided the funds.

* The NAR Membership Discount Program got a boost recently, when FSI, CMR and Kopter renewed their agreement with the NAR to give a 10% discount to a new member and a 15% discount to renewing ones. New to the program are CNA, SSRS and Composite Dynamics (though Composite Dynamics certificates are available to renewing members only). Thanks a lot folks! We really appreciate it, especially coming from the ones who can least afford it!

* Pink Book Revision or Revolution? The so-called Pink Book revision committee has a few surprises for us all. First of all, payloads probably won't be made of lead. Look for a new standard of a 'frangible' substances, (tentatively of course). Super Roc lengths will be multiplied by 1.5 to emphasize large model building. A semi-scale event will be added (looks like fun), and space systems will be more mission oriented (i.e., semi-scale, no launcher or ignition system).

Biggest gripe though, is that Dual Eggloft may be dropped. Yes! Flat-ass gone! Seems that the event, termed 'legalized manslaughter' by one member of the committee was voted out by a simple majority of the committee. And only 5 votes were cast (out of 20). Four to can the event and one to keep it. Democracy in action! Who cares if it was one of the most challenging and most flown events over the past few years? Watch out, Plastic Model may be next! If this keeps up, competition might end up with Big Berthas in Class 1 PD. Voice your opinions and Brick Bats at Chris Tavares, 8468 Falling Leaf Rd. Springfield, VA, 22153.

* The 1980 World Championships will be held on Labor Day weekend at Lakehurst, New Jersey. Rockwell International is interested in sponsoring the event. Plans are being made for a flyoff for the team spots at NARAM-21. It looks as though there will be a six round flyoff for the Eagle team, which should be wild. Guppy, while automatically assured a spot in the competition, will have to compete to make the US team. Either Single Payload or Scale Altitude will be added to the NARAM events, as a flyoff round. The Scale team will be chosen from the best modelers in combined B/C Division. What would be the ultimate Scale model, after last year's experiences with International Scale judging? Seems that a scale Space Shuttle would fit the bill nicely. The basic configuration is unstable, so the model would have to be radio controlled during boost and presumably re-entry. Those bricks on the Orbiter's bottom would be challenging, and why not have the boosters recover as the real ones, via parachute?

It wouldn't be the least bit suprising to see Bob Parks working on one right now. Of course, the whole thing is dependant on whether or not the shuttle can get off the ground by then. Right now, the initial flight has been pushed back into 1980.

* Model Rocketry's safety record can't really be appreciated until one realizes that some people can get hurt doing anything. Consider the following: 'The Practitioner' a leading British medical journal, has determined that bird watching may be hazardous to your health. The magazine, in fact, has officially designated bird watching a 'hazard-our hobby', after documenting the death of a weekend bird watcher, who became so immersed in his subject that he grew oblivious to his surroundings and consequently suffered the fate of being eaten alive by a crocodile. Shades of NARAM-17! The above article is from the November 1976 issue of Penthouse.

* Late News Flash! After repeatedly trying to sign free agent artist Tony Williams, (the CBH is among his works), to the SNOAR NEWS roster, Editors Chris Pearson and Matt Steele have withdrawn their latest offer and instead have brought Alan Tuskes out of retirement. Williams, on of the NARCS' Impact staff, reportedly was not enthused about coming to the chilly Cleveland climate, and wanted his contract adjusted accordingly. The latest offer from SNOAR reportedly was in the neighborhood of 1.1 million dollars for 1.1 million years, and 30 cases of MD 20/20. Tuskes, who retired from the editorship more than a year ago, is expected to lead SNOAR NEWS to an unprecedented forth straight LAC Honorable Mention!

* NAR Insurance seems to be working out well. Word from on high indicate about 2/3 of the NAR membership is insured. That is a great deal higher than the NAR's sister organization, the AMA. A few small problems are cropping up, though. Seems that some sections are having their contest results held up until they can prove they were insured when they hosted the meets. If the sections were not insured, it looks like those points could be trashed. Don't let your section go uninsured! And remember, individual insurance will now follow your membership renewal.

* If you've been wondering where Philbert is, and apparently some of you are, Phil has moved to Bloomington, Ill., to live with his father. Never fear, motor mouth fans, as he does return to our area for certain club functions. A living legend in his own time Phil's greatest claim to fame was his inductructable Pan Am Space Clipper, which pranged into Chris Pearson's car, only to take third place at NARAM-18's infamous 'Plastic Dust' event. Any one interested in communicating to Phil should yell towards Chicago (Hey Bunny, wanna club member, cheap?). Or write; Philbert, 4418 Blackstone Ct., Bloomington, IN. 47401.

* The NAR has a few new life members, and they are deserved ones, too. The Board of Trustees extended to past presidents or executive directors of the NAR. The list includes Dr. Manning Butterworth, Dr. Ellsworth Beech, James Barrowman, Al Lindgren, Dr. William Rich, G. Harry Stine, James Kukowski, Vernon Estes, Leroy Piester, and Bryant Thompson. Also of interest were proposed new NAR members which included former astronauts John Glenn, Harrison Schmitt, Frank Borman, and Michael Collins. Other space notables on the list were Hugh Downs (National Space Institute), Fredrick Durrant (NASM), and Star Trek's Gene Roddenberry. We're in pretty good company guys!

MINICON-3

JUST A WILD AND CRAZY TIME!!!!

SNOAR's third anual MiniCon was the largest one yet. Two days after Thanksgiving, approximately 19 rocketeers got together to exchange their various views on what was going on in the fun world of model rocketry. And, for those in attendance, a wild and crazy time was guarenteed for all.

Around 9:00AM, everyone was gathered at the humble Garfield Hts. Library and were treated to doughnuts and hot chocholate while ogling the display rockets that were set up. Among the models that caught the eye were Bob Ferrante's Maxi X-Wing, the Centuri UFO's, the Estes R2-D2's and Mike Nowak's collection of BG's and RG's. After set-up, the first discussion group was led by Matt Steele on Scale and Plastic Model. Matt pretty much followed the recent articles on Scale in SNOAR NEWS and an upcoming one on Plastic Model. The main emphasis in both events were that they aren't that hard, and that qualifying is the most important consideration.

Jim Gazur then led a group on new ideas about BG's. The subject is also the topic of an upcoming SNOAR NEWS article, but the basics can be revealed. The two major topics in Jim's talk centered on Vee tails and Winglets. Basically, the theoretical advantages and the mechanical were described, as well as possible problems. Watch for a complete article soon; a summary cannot do the ideas described justice.

Lunch was rather uneventful, as the usual ketchup fight failed to happen, much to the disappointment of none, however, the usual 20\$ plus McDonald bill did show up.

Dave Dailey and Larry Chumlea described the various aspects of the SR59 calculator and how they can be related to model rocketry projects. And Chris Johnston, chemist at large, explained solid propellant rocket engines like the big boys do it.

For some reason, only four entries appeared in the craftsmanship contest. Bob Ferrante's Maxi X-Wing and Matt Steele's Cobra 1500 took first place in their respective age divisions. The rest of the convention was highlighted by the usual BS and a slide and film show of recent contests, including NARAM-20.

The third anual Minicon was a fun filled time for all. If you were there, you know all about it, if you weren't there, make plans to be there next year.

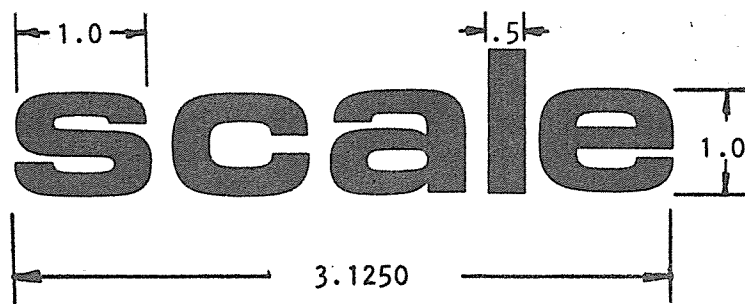
(Editors Note: Why such short coverage of such a major event? Well, most of you were there, for one thing (at least 20%). Also, the reports were so good that rather than just summarizing them, we are planning on presenting them in depth in the next few issues. Finally, you just had to be there....)

Question-of-the-Month

Most of us are familiar with Small Sounding Rocket Systems and Composite Dynamics as large engine suppliers. Many years ago (believe us, many) the high power engine was the Coaster Super Jet. Anybody know anything about them? Anybody have any specs on them? Anybody HAVE one? (Anybody willing to part with one????)

The Dreaded Space Filler!!

The word is out that Composite Dynamics, long known for high-strength construction materials and gigantic engines is planning production of a new composite fueled E engine that would be the same diameter and length as the Estes D12 engine. It is not known if it will be a full E, but the rating is tentatively set at about an E20. Pre-production problems have set back the introduction of the engine a bit, but look foward to this.



By Mike Nowak

Prototype selection is an important step in building a good scale model. The prototype selection can be made before obtaining scale data, or can be selected from available data. When trying to obtain data for a certain prototype from a manufacturer, be flexible, do not ignore another perfectly good subject if you are having trouble getting data for your first choice. Prototype selection for scale is pretty much wide open; Space Systems, Super Scale and Scale Altitude are somewhat limited to prototypes.

For the scale event, find a rocket vehicle that fits your proficiency skill. If you've never built a scale model before and have been building models for less than a year and a half, a sounding rocket kit like the Estes Black Brant 3, MPC Asp or MPC Astrobee D is recommended. For the more adventurous, the CMR D-Region Tomahawk is a excellent, but difficult and possibly discouraging model. Other sounding rockets like the Nike-Smoke, IQSY Tomahawk, and the Viper are good starters for both the novice and intermediate rocketeers. If you dream of that 1/100th Saturn V or Vostok pair as your immediate goal, put those dreams away until you have mastered the simpler models. It won't be effort wasted. The techniques utilized and perfected on a simple model will make the construction of a difficult model much easier. Choosing a prototype scale factor is the next step. The scale factor is simply the models dimensions divided by the prototypes dimensions (usually the diameter of each). For example, the Sandhawk has a diameter of 13 inches. The Estes Sandhawk is built around a BT-55, which has a diameter of 1.325 inches. The kit's scale factor is 1.325 divided by 13, or 1:9.8. For scale, there are relatively few size limitations. A model with only one diameter is a breeze to scale, since it can be based on anything from a BT-5 or a BT-101. If this is the case, the size depends on the amount of modeling you have and the amount of detailing that your data shows. If your scale data is just the minimum information (See 'A Note on Scale Data') and/or this is your first try at this prototype, a smaller model is preferable. If you have a complete blueprint set of a space vehicle (and some of us do...) and are experienced, then a large model is recommended to show off the detailing. Of course, a small model without details will suffer when it comes to detailing points, but some of those points will be made up in degree of difficulty judging, as small parts are harder to make than large ones. Also, it is easier to stay within tolerances on a small model than on a large one. Compromise is not a bad idea, and a good choice would be to build around a BT-20, RB-77, ST-8, ST-10, RB-90, or BT-50. A model with two body diameters usually presents a challenge in finding two commercial tybes that are in the same ratio as the prototypes. As Murphy's Law dictates, finding an exact match is impossible, but sometimes a little jiggling of the scale factor can incorporate the two tubes acceptably. To find these combinations, a scale builders body tube chart appears in this installment of 'Scale'.

Prototypes to stay away from initially include air launched missiles like the Sparrow, Sidewinder, and Phoenix. These missiles were designed for high velocity air launch, not the low speed launch that models encounter. Hence additional stability must be incorporated into these models, leaving them to the experienced modeler. Data on current military missiles is notoriously hard to get, so don't set your heart on building the latest top secret missile, either.

For Scale Altitude, the choice narrows quite a bit. The ideal prototype is a subsonic single stage, single diameter three finned sounding rocket that easily seen in the sky, and not too draggy. The Black Brant 3 again fits the bill. Other good choices include the D-Region Tomahawk, IQSY Tomahawk, Dandhawk, Astrobee-D, Asp, WAC Corporal, and Viper. In Scale Altitude, the trade off is between altitude and weight (detailing). Generally, don't skimp on the detailing, but use a minimum size body tube (at least for Class 0-3 Scale Altitude).

Finding launcher data is the hard part of Super Scale. The only available data is for the Asp, although the SNOAR Scale Library lists data for five other prototypes. Actually, the Asp is not a bad choice for a Super Scale model, as the launcher is good looking, easy to build and can be built with moveable parts. The Asp is an relatively easy model to construct that flies well. Other prototypes have more complex structures, but are usually not any harder to build than the prototype itself. When building a scale launcher or model, check out a current Plastruct catalog for shapes that could

make building a snap. Also, keep in mind that craftsmanship is important and by choosing materials like plastic, cardboard and (gasp!) metal, the tedious work of filling and sanding can be eliminated.

Space Systems is the pinnacle of model rocket competition. It is like Super Scale, but the model must perform. A one ounce lead payload is required to be carried onboard, for the model must be built around a RB-77 or bigger tube. Also, an altitude prediction is needed, and the score is calculated by adding the altitude and points for landing in the recovery area.

There are two basic strategies in Space Systems; 1) Build a good static model and send it up about 100 meters, and land it in the recovery area, keeping wear and tear on the model to a minimum, or: 2) Build a smaller, less detailed model and give it a wallop, trying to get 300-600 meters out of it, knowing that it will miss the recovery area anyways. The first strategy is sure; the second is a gamble (getting tracked, returning the model, having it hold together, ect.). Of course, a compromise isn't bad either. The Asp is the first choice of most modelers, but don't overlook the IQSY Tomahawk as a good candidate. Building a Space Systems model is not that hard (we did our NARAM-20 model in 5 days), and it is a model that few others have...and that's something be proud of.

The upcoming contest year will include three Scale events at SNOAR hosted regionals. Scale will be flown at GLRM-79, Space Systems at Buckeye-79, and Class 3 Scale Altitude at MMRR-79. Ideally, three different models could be built, one for each event. However, most people have a hard enough time building one scale model, let alone three. If you don't have any scale models under your belt, the best choice for a single model would be an Asp or a IQSY Tomahawk, built around an RB-77, RB-90, ST-10, or BT-50. For Scale and Scale Altitude, the Black Brant 3 would be sufficient. For those who like a challenge, a Long Tom, or Aero-Hi could pass for all three events. The contest planners are hoping they will see some nice models in all events with Scale at GLRM-79 not taking a back seat to the other scale events. Then again, Tom Hoelle might bring his Internats Genie, if he can get it below 16 ounces. Anyways, the upcoming year should provide some interesting flying.

Finally, before starting anything, read the Pink Book through a couple times. Good luck and start building. It's never too early.

SNOAR SCALE LIBRARY

A NOTE ON SCALE DATA

Do not worry if you do not have a suitcase full of data on the scale prototype that you have selected. It is not necessary. As long as the minimum data points (overall length, diameter, nose cone length, fin length, and width, transition lengths, fin thickness, color pattern, and one clear photo) are presented, there is enough information to start the model. Other information can be collected, but do not be misled into thinking that the key to building scale is data. It is not, data is worth only 50 points, while workmanship is worth 300 points. Don't waste valuable building time by fretting needlessly over the lack of scale data; instead, spend the time constructing the model. Collecting scale data is a cumulative thing; oftentimes it takes years to complete a collection.

SNOAR SCALE MODELER'S BODY TUBE GUIDE

MANUFACTURER	O.D.	I.D.	LONGEST LENGTH	DISCRIPTION	PRICE
Estes	.541	.515	18 inches	BT-5	\$0.60
Centuri	.543	.515	18 inches	ST-5	\$0.50
CMR	.558	.538	12 inches	RB-50	\$0.30
CMR	.584	.564	12 inches	RB-52	\$0.30
MPC	.591	.571	8 inches	T-15	\$0.25
Estes	.736	.710	18 inches	BT-20	\$0.60
CMR	.736	.710	12 inches	RB-74	\$0.40
Centuri	.759	.715	18 inches	ST-7	\$0.50
CMR	.766	.740	12 inches	RB-77	\$0.40
MPC	.788	.768	12 inches	T-20	\$0.40
CMR	.890	.864	16 inches	RB-90	\$0.55
Centuri	.908	.865	18 inches	ST-8	\$0.75
FSI	.903 ?	.903	16 inches	HRT-8	\$0.60
CMR	.920	.894	16 inches	RB-92	\$0.55
Estes	.976	.950	18 inches	BT-50	\$0.70
MPC	.985	.965	12 inches	T-25	\$0.50
Centuri	1.040	1.000	18 inches	ST-10	\$0.90
CMR	1.170	1.120	18 inches	RB-120	\$0.80
MPC	1.182	1.162	9 inches	T-30	\$0.45
FSI	1.130 ?	1.130	18 inches	HRT-10	\$0.80
FSI (phenolic)	1.125	1.040	19 inches	PT-19	\$1.25
Estes	1.325	1.283	18 inches	BT-55	\$0.95
Centuri	1.340	1.300	18 inches	ST-13	\$1.00
FSI	1.340	1.300	18 inches	RT-12	\$0.90
MPC	1.379	1.559	8.6 inches	T-35	\$0.50
Centuri	1.640	1.600	18 inches	ST-16	\$1.25
Estes	1.673	1.595	18 inches	BT-60	\$1.00
FSI	1.600 ?	1.600	18 inches	RT-15	\$0.90
Centuri	2.040	2.000	18 inches	ST-20	\$1.75
FSI	2.100	2.000	18 inches	RT-19	\$1.50
Estes	2.217	2.115	17.5 inches	BT-70	\$1.35
Estes	3.938	3.896	16.5 inches	BT-101	\$1.95

Only tubes that measured over 8 inches were listed. We didn't want to get your hopes up with some stupid too short tube. Keep this guide handy!

Whatever happened to.....

After printing our 'Question-of-the-Month' and 'Whatever happened to....?', we have be able to track down some of the awnswers. First of all, in response to the question, 'What does G. Harry Stine do for a living?', the awnser comes from the Covington Orbital Model Rocket Club's newsletter Orbital Report (Editor, C.T. Greenlee). G. Harry Stine is a self-employed marketing consultant handling all marketing, advertising, product releases, ect., from a major radio control airplane firm (Pro-Line), as well as a major instrumentation company. He is also working on a science-fiction TV series. G. Harry Stine is also a consultant to a Fortune 500 company on advanced composite materials and space industrialization, and a consultant for the NASM.

As for 'Whatever happened to...?', the info came from many varied sources. Don Carlson is rumored to have been recently married, and Steve Behrends is attending Rochester University, where it is said that he has discovered girls. George Flynn is involved with the NAR Publications Committee, and Doug Ball is now in Texas, and a Trustee. Bob Parks, of course, participated with the most recent Internats team, while Bob Allen, the real Metro Cleveland founder, is the personel director for NASA's Lewis Research Center. Anyone know where the rest of the people went?

COMPETITION COMMENTS

Not too long ago, someone asked me why I compete in the coming contest season. After all, I had participated in the previous year's National Championship team, and had won just about everything in sight. I had to think about it for a while, and discussed reasons like getting to see other rocketeers, helping other club members, and helping the club do well nationally. But, I decided later, the real reason that I compete is that I enjoy seeing my models perform as expected.

There is a sense of accomplishment in qualifying a flight, and even more in seeing that flight turn into a winning one. Yet, as long as my models perform as designed, I am not concerned with their relative performances. If I win, I win. If I place second but my model works as planned, that suits me. I do get upset if I beat myself, either by using the wrong strategy, or by the incorrect use of materials. It comes down to a point of not competing against other rocketeers, but against yourself. I think that's what it's all about.

So why compete? I don't think that it is for national or regional fame....There's too few people to impress, and no one remembers national champions from year to year anyways. The prizes, except perhaps on a national level, hardly allow a competitor to break even. There are better ways of being vindictive than to trounce an opponent in modroc competition. I compete for the satisfaction of seeing my models work. Besides gaining a sense of accomplishment, it's fun! Competition is a lot like a lot of other things in this world; what you get out of it depends on how you approach it. How do you approach it?

OPEN MOUTH, INSERT FOOT DEPARTMENT

If you read in the Internats issue of the Rocketeer, you probably noticed, with some humor, that a reference was made of a "model rocket company in Wisconsin" which had failed to fill an order for the Greek Internats team, therefore, preventing said team from competing in the Internats.

We printed basically the same thing, and a short time afterwards received a letter from noneother than Myke Bergenske, president of AVI, which was the before-mentioned company.

"AVI has an order for \$4000.00 (not \$600.00 - ED.) worth of materials that are packed and have been packed since March 1978 for shipment to Greece. Unfortunately, the Greek Consulate in Chicago did not provide the forwarding company with the documents necessary to make the shipment possible; the letter of credit obtained by the Greek Airathletic Association was not perfected and shipment could not be made during the term of the LC. We are awaiting further word from the Greek official responsible. There was never any intention to form a Greek team for this 1978 event, according to Mr. Panagopolis; they hope to compete during the Balkan Games in 1979 and be ready for to compete unofficially in the 1980 Internats."

Myke went on to state; "No one seems willing to take credit for the statement that appears in the Rocketeer. In any case, those facts are not correct and we can document them."

SNOAR Awards

TADA! The following are club records current as of 12/1/78. A good year for all, as 27 new records were set. Keep it up guys!

Gnat BG	Nowak/Steele Team	80 sec.	SOOT 2
Hornet BG	Alan Tuskes	85 sec.	SNOARSM-4
Sparrow BG	Matt Steele	119 sec.	Son-of-MAR
Swift BG	Mike Nowak	296 sec.	MMRR-75
Hawk BG	PS'N Team	94 sec.	NOMID-77
Eagle BG	Brad Bowers	79 sec.	SOOT-2
Gnat RG	PS'N Team	18 sec.	Daughter-of-MAR
Hornet RG	PS'N Team	88 sec.	Daughter-of-MAR
Sparrow RG	PS'N Team	91 sec.	MMRR-78
Swift RG	PS'N Team	61 sec.	Munchkin-3
Hawk RG	PS'N Team	283 sec.	MMRR-78
Eagle RG	Team Stupid	7 sec.	GLRM-77
Class 00 PD	Phi-Rho Team	46 sec.	NOROC-75
Class 0 PD	Jim Gazur	207 sec.	MMRR-75
Class 1 PD	PS'N Team	599 sec.	MMRR-78
Class 3 PD	Mike Wagner	129 sec.	SOOT-2
Class 00 SD	Frank Peri/Mike Wagner	14 sec.	ACRM-78
Class 0 SD	Tom Banker	37 sec.	SNOARSM-8
Class 1 SD	Frank Peri	94 sec.	Munchkin-3
Class 2 SD	Jim Backlas	70 sec.	ACRM-78
Class 3 SD	Mike Nowak	113 sec.	Munchkin-1
Class 1 HD	PS'N Team	51 sec.	GLRM-78
Class 2 HD	PS'N Team	65 sec.	Daughter-of-MAR
Class 3 HD	PS'N Team	107 sec.	NARAM-20
Class 3 Altitude	John Squirek	321 m.	SOOT-2
Robin Eggloft	PS'N Team	199 m.	GLRM-78
Pigeon Eggloft	John Squirek	284 m.	NARAM-20
Ostrich Eggloft	Frank Peri	812 m.	SOOT-2
Mercury Dual Eggloft	Nowak/Steele Team	463 m.	GLRM-77
Pee Wee Payload	John Squirek	179 m.	NARAM-20
Single Payload	Nowak/Steele Team	535 m.	SNOARSM-8
Design Efficienty	Nowak/Steele Team	138 m/nt-sec.	SOOT-1
Atlas Super-Roc	John Squirek	229 points	ACRM-78
Titan Super-Roc	Chris Johnston	301 points	SNOARSM-4
Monster Super-Roc	John Squirek	431 points	NARAM-20
Dinosaur Super-Roc	Matt Steele	246 points	Munchkin-1
Class 1 Scale Altitude	John Squirek	816 points	MMRR-78
Predicted Altitude	Grant Lieby	0.6 %	NOROC-75
Quadrathon	Jim Gazur	33 points	SNOARSM-5
Open Spot Landing	Jim Gazur	13'2"	SNOARSM-4
Streamer Spot Landing	Bob Ferrante	6'9"	Munchkin-3
Parachute Spot Landing	PS'N Team	12'1"	Munchkin-3
Drag Race	Matt Steele	2-0	SNOARSM-4, Munchkin-3
Class 1 Flexwing	PS'N Team	9 sec.	Daughter-of-MAR

And the winners are.....(the envelope please).

PS'N Team	13	Mike Nowak	2	Jim Backlas	1
John Squirek	6	Mike Wagner	2	Chris Johnston	1
Nowak/Steele Team	4	Team Stupid	1	Tom Banker	1
Matt Steele	3	Phi-Rho Team	1	Grant Lieby	1
Jim Gazur	3	Alan Tuskes	1	Bob Ferrante	1
Frank Peri	3	Brad Bowers	1	Philbert	0

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Fairfield, Ohio 45014
(216)

Dale Evanovich
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Struthers, Ohio 44471
(216)

Tom Evansky
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(216)

Bob Ferrante
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Frank Peri (Sec.)
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(216) 662-2204

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Phone known only by a
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Alan Tuskes
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Mark Volpe
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Mike Wagner
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Larry Peters
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Northport, AL 35476

Tony Williams
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Jasper, AL 35501
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SCHOOL ADDRESSES

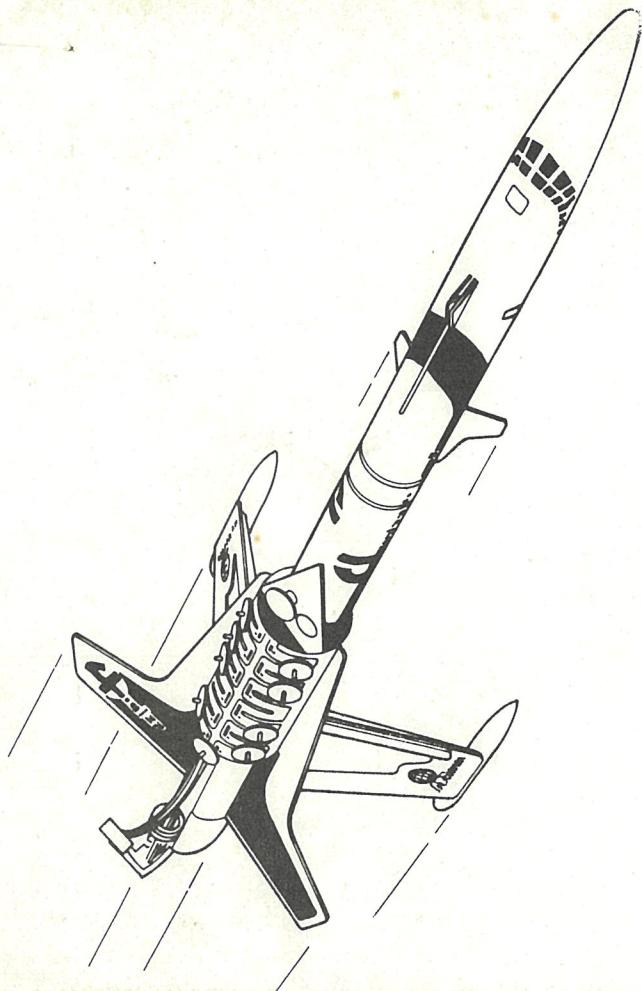
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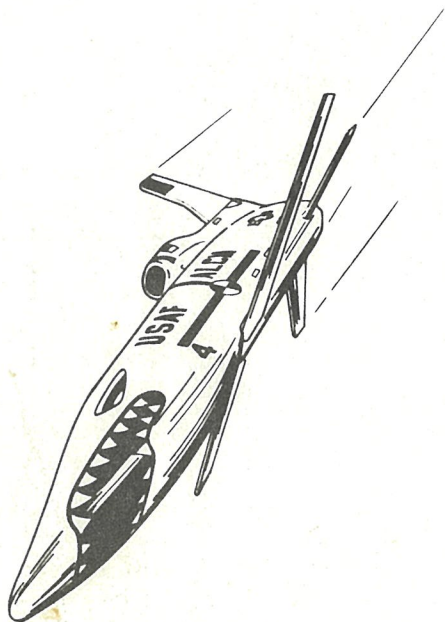


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