

STAR NEWS

February, 1986

THE LEADER IN SPACEMODELING

\$2.00

HOW TO GET GREAT LOOKING MODELS!



Model Rocketry's Longest Publishing, Most Controversial Newsletter!

February 1988

Volume 14, Number 1



From Your Sometimes Sober Editors

Change of Places, Change of Faces

Hello to everyone! Sorry that this issue is late, but there have been some major editorial changes here at the SNOAR NEWS offices. Due Robyn's impending motherhood, job pressures, and hosting NARAM-39, I (Matt) have decided to take a less active role in the production of SNOAR NEWS. As such, I have turned over the editorial duties to an old Ohio friend of mine, John David "JD" McNeil. As schoolmates, we flew together often. JD was a member of SNOAR in the formative Jon Randolph/Jim Gazur days, but dropped out of the hobby until recently, when he called me up and volunteered to take the helm of the fabled SNOAR NEWS. I will remain on as Production and Subscription Manager, so future disruptions should be minimal. *(Continued on Page 17)*

Duh Credits 'n Impo'tant Stuff

QUOTABLE

"He can be President, he shows up at meetings!"
Chris Johnston, commenting on the SNOAR High Command election process.

COVER STORY:

How to get great looking models? Well, just ask 'em! Also, it will help if you read up on how to properly finish model ROCKETS as described in this issue. Since John Parsley can't really put his wife Connie on the cover of AmSpace, we decided to go it. Connie is demonstrating the latest in Bloomingdale's fashion, and Chas Russell's NCR Phantom 4000. Photo by Chas "Well, I'm off to Belgium despite the fact they negotiated away the nuclear cruise missiles" Russell.

CREDITS:

Newly crowned King Editor: JD McNeil; The old retired king who gave up his crown, but still manages magazine production and subscriptions: Matt Steele; The Matriarch: Robyn Palmer Steele; The Executioner: Chris Pearson; Bodyguard: George Cassaway; The Court Jester: Mr. Maudog (Tony Williams); The Emperor of NARland: J. Fat Miller; The Duchess of Pen-

nse: Mary Roberts; The Duke of Parma: Dan Kafun; The Wizard: Chris Johnston; The Young Knights: Bob Ferrante, Brad Bowers, Randy Kelling, Vince Muegele, Terry "What's in a nickname, anyways?" Lee, and Chas Russell; The Sleepless Knights: Jack Kobzoff, Sammy McNully, The Honorable Wasco Schafter, and Robert Anderson; The Damsel in Distress: Heidi Smakula; Hanging around in the Dungeon: Jerry Irvine.

IMPORTANT STUFF

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Subscription price is a mere \$10.00. Make your checks payable to Matt Steele, 13017 Branscomb Road, Huntsville, AL 35893. Checks made out to JD will be returned; we don't want him to touch the money. OK?

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An Overview of Finishing Techniques

by Chris Pearson and Malt Steele

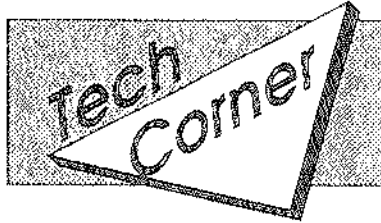
Introduction

Everyone likes the look of a well-finished rocket, be it either a futuristic design, a military look-alike or scale rocket. Finishing enhances a good design or construction job. Certain rockets don't have to be finished, as it would be useless to completely finish a "boilerplate" version of a design (one that was built to try out construction techniques or to see if the design really would fly), and certain high-performance competition designs don't have to be painted, as the weight of the paint would affect the overall performance of the model.

Generally, the finish of the model reflects the person's overall attitude toward modeling. Poor construction techniques, unfinished wood surfaces, and lack of paint tells us that this person cares little about performance, reliability, or reusability. A well-finished model may take longer to construct and complete, but it will last longer, as the modeler will take better care of the rocket before and after flight. The model will also be flown more safely, as the modeler wants the rocket back, either for display or future flights.

Before getting started...

We suggest that your work area be clean and as dust free as possible. Sure the cat likes to sleep right on top of your construction table, but a quick wipe with a damp rag will get rid of all that cat hair, dust, wood chips, etc. Keeping the area clean during all phases of construction and finishing is essential. Clean hands are also a must. How many times have you painted a model only to discover "super-glue fingerprints" on the tubes or fins? There are a number of products available today which will prevent epoxies or superglues from sticking to you hands, or get them off once they have. A clean working environment will reflect itself in a good looking, well finished model, free of fingerprints, smears of glue, spotty paint jobs and bad detailing. Have plenty of paper towels and rags available. These will help keep your workspace and your hands clean.



Adhesives

Suffice it to say, you must use the right types of glues in construction of the model. The most common types of glues in use today in the hobby are epoxies and superglues (cyanoacrylates), otherwise known as CyA's, or CA's. While I am sure that all of us started building rockets with Elmer's white glue, it is not a good choice anymore, especially with high-power rockets. White glue generally doesn't have the bonding strength of other glues, due to its high water content. Other types of water based glue, such as wood glue, or a aliphatic resin like Titebond (yellow glue), are better choices, but not up to the strength of epoxies. Except for specialized applications, do not use plastic cements, contact cement, hot melt glue, wood cement, rubber cement and any type of silicon glue. Use of these types of unacceptable adhesives will result in poor finishing and perhaps catastrophic flight results.

(We recommend you read NCR info report #3 on current adhesive techniques.)

Finishing Fins and Nose Cones

Fins and nose cones consist of many materials; balsa, plywood, plastic, Aerofoam, and others. One must first determine what material the finished piece will be. The finishing techniques for each will vary. Plywood requires filling in the wood grain before painting, but not to the degree that balsa does. For most plastics, all you have to do is clean the cone and paint. The same holds true for Aerofoam. Plastic and Aerofoam cones should first be lightly sanded with #400 grit sandpaper or #000 steel wool, and then wiped with ethanol to remove mold release and dust. Let the cone dry overnight before priming and painting.

Finishing Materials

White glue:

Believe it or not, one of the first wood finishing materials was simple white glue. One would rub it into the wood surface, and sand when dry. This process worked, but had a tendency to warp thin balsa, because as the glue dried, it shrank. It also added a great deal of weight to the model. White glue is no longer recommended as a finishing material.

Shellac:

This became the next material to be tried, because of its sealing properties with regular hard grain wood. It would dry hard, making it very sandable, but required many coats to fill the porous balsa surfaces, and it smelled bad. It, too, is no longer recommended as a finishing material.

Clear dope:

This replaced the use of shellac as a filler. Dope dries fast, has a hard finish, and is lightweight. Once it has set, it is easily sandable. However, it had one of the drawbacks of shellac, in that it took many coats to fill balsa surfaces. It also has annoying fumes. Still, for contest models, this is a good choice.

Clear dope and talcum powder:

Someone came up with the idea to use talc as a filler in the clear dope, and thus balsa fillercoat was born. The talc acts as a bulk filler in the dope carrier and fills the pores and cracks in the wood surfaces much faster, and requires fewer coats and less sanding. One can mix the talc and dope at home or go to the hobby shop and buy.

Balsa Fillercoat:

Manufactured by several companies including Pactra and SIG, this is basically the clear dope with fillers such as talc and balsa dust. Balsa fillercoat has been given several other additives to enhance its filling properties, and works well with balsa or plywood. One drawback is that it takes a long time to really set up. It is sandable within a few hours, but unless it is force-cured, it remains soft for about a week. The minimum time between coats should be 24 hours to get maximum toughness. SIG used to manufacture a material called Supercoat which was thinable to sprayable consistency, allowing large surfaces to be covered with relative ease.

Sanding Sealer:

This is basically ground up balsa wood in a clear dope carrier. It is lighter than balsa fillercoat, requires the same applicator techniques, and has generally the same results.

HobbyPoxy Stuff:

In the search for new finishing materials in the mid 1970's, many things were tried, and one of the newer finishing processes that came out of this search was the use of "Stuff". A dent and crack filler, it can be reduced with the HobbyPoxy thinner or diluted with balsa fillercoat (the recommended method) and used to fill all wood surfaces. Thinned to a brushable consistency, this orange colored material fills all wood

surfaces with two or three coats and does not require sanding until after the final coat is dried. Although the filler will be dry to the touch after a few hours, it is recommended to wait at least 24 hours before sanding. This filler will dry rock-hard, and can be sanded to a glass finish with ease.

HobbyPoxy Fast Grain Filler:

A recent release from HobbyPoxy is Fast Fill. This is an air-dried polyester filler, thinnable in alcohol, which requires no two-part mixing or stirring. It flows on easily and will fill most wood surfaces in two or three coats. Sand as usual, and it gives a good hard painting surface. Since it is white, it also provides a good primer surface. Be sure and get the formulation that is marked "New" or get cans manufactured after January 1987; the older formulation was almost impossible to sand.

Epoxy Fillers:

For years, when a person wanted a super-hard working surface, one would coat it with epoxy glue. This method became somewhat obsolete with the widespread use of polyester fiberglass resins. It is still used to coat wood and paper surfaces to achieve increases in strength. PIC recently introduced a brushable Coating Epoxy resin system which is suitable for laminating materials or coating and sealing them. Brushed on the outside of a shroud or paper transition, or on anything needing reinforcement, will greatly increase the strength of that part. PIC Coating epoxy is great for finishing body tubes, giving them a glass smooth finish and extra strength.

Fiberglass:

Coating a part with fiberglass cloth and resin has long been a technique used in the model airplane arenas for reinforcing critically stressed areas. With the advent of high-power large scale rocketry, it has become a necessary item for those multi-Mach vehicles or over-sized monster rockets. Balsa parts can be strengthened and still retain the relative lightness of the material. Built-up fins can be given the strength of plywood without the weight. Covering fins, body tubes or fin-tube joints with fiberglass cloth is an art, and should not be tried without researching it first. Many model aviation magazines have how-to sections which instruct beginners in this area. If you are just going to coat areas with fiberglass resin, the technique is much simpler. Prepare the part, such as a fin by sanding the airfoil on it. Resins such as SIG Fiberglass Resin have instructions for proper mixing ratio, but the usual ratio of resin to hardener is 15 drops of hardener to one ounce of resin. Working time is nominally 15 minutes. Brush the resin over the fins like you would

normally fillercoat. Try to avoid runs or puddles. Fill both sides and then let it set for about one day. The fin is now sandable, and should not require further filling. It is recommended that you use a small hand held orbital sander for sanding, or it will take several years before you complete sanding those fins. If you want a glass smooth surface, now apply SIG Finishing Resin in the same manner, let harden and touch-up sand those areas needing it (bubbles, dust specks, etc.). The use of fiberglass resin for filling fins makes them virtually indestructible, but does add a lot of weight, and the fumes from the resin are harmful.

A Word of Caution

Most of the glues, fillers and resin systems that are mentioned and others that are in use today contain chemicals that can be harmful to your health. Use them only in a well-ventilated area, away from open flames. Don't smoke when applying glues or fillers, as they can be flammable. All resin systems (epoxies and fiberglass) contain catalysts that are mutagens and can cause allergic sensitization after prolonged contact. Cyanoacrylate glues can (all jokes aside) glue your fingers to whatever you're working on, as well as the table, the cat or some other part of your body. Only recently have products such as PIC Apart or Z-7 Debond-er become available as superglue solvents. If these are unavailable, acetone can be used.

Fillets, Dents and Cracks

Of all glues, epoxies are the most widely used for filleting fins. The five-minute type is most common as it sets up quickly, and won't run as easily as the 30 minute or longer types. Smooth fillets can be accomplished by wetting your finger with isopropyl alcohol (an epoxy solvent) or PIC Resin Wacker before you even out the glue in the fillet. 3M makes a type of glue called 1838AB, which is very thick, and is great for making motor mounts or filleting fins, as it won't run even in the upright position. HobbyPoxy makes a thixotropic glue which is excellent for gluing or filleting as it has a jelly consistency, won't run or sag and allows you to fillet all the fins at once, and stand the rocket upright to cure. An alternative to regular epoxies is something like PIC Poxy-Lite or SIG Epoxolite Epoxy Putty. These come in tubes or a tub, can be applied with a spatula or popsicle stick, cure in about 15 minutes, and can be carved or sanded. Filleting can be done easily by wetting your finger with either alcohol or PIC Resin Wacker and smoothing the fillet. The epoxy pastes have the advantage of being able to take on shapes that normal epoxies cannot, and are 1/3 lighter than regular epoxies.

Dents and cracks in fins, fillets or nosecones can be repaired in a variety of ways. The use of micro-ballons and CA's is common as a quick fix, although baking powder can be used in place of micro-ballons. Dents in wood surfaces can be repaired with HobbyPoxy Stuff or HobbyPoxy two part Plastic Filler. PIC Poxy-Lite is the material of choice when filling the line of pits on the Aerofoam nose cones or Pic Patch Filler can be used, and can be used on all wood surfaces. Cracks in fins or fin/fillet joints should be repaired with the same glues that were used in construction if possible, but using a super-thin variety of CA (such as Zap CA or PIC Stik Penetrating CyA will also work. The use of a gap filling type of CA (examples are Zap-a-Gap CA+ or PIC Stik CyA+ and an accelerator such as Zap Kicker or PIC Pronto is recommended for large gaps or complete fins shears.

Surface Preparation Before Painting

To achieve a good painted finish, the model must be made as free of dirt and oil as possible before the first coat of primer or paint is applied. It is recommended

Below: Chris Pearson poses with one of his immaculately finished models.



that you wipe the entire model with a lint-free cloth dampened (but not soaked) with ethanol. This will remove fingerprints, dirt, mold release compounds, dust, and residues that come to the surface of many cured adhesives. Be sure to use pure ethanol or isopropyl alcohol; methanol alcohol often contains mineral oil or wintergreen that may wipe away fillers or craze their surfaces.

Primers

With most paints, a primer coat must be applied before the main color scheme is put on. The lack of a good primer coat is often the mark of a novice modeler. There are many reasons for applying a primer coat of paint. First of all, application of a primer coat of gray will allow for a uniform undercoat color. When you undercoat with a primer, all of the colors on the model will look uniform, rather than a lighter color over the white tube, and a darker color over the brown fins. A primer coat allows the top coat to adhere better to the model. Many times, a glossy paint will not adhere well to a glassine tube without a primer undercoat. A coat of primer will also help hide imperfections, and make others apparent before the final coat of paint, allowing you to fix them. With bright or translucent colors, a white or silver undercoat must be used to get a good color depth. The undercoat of a model painted with florescent colors must be a flat white to get the proper effect. In a lot of cases, a brand of paint will also carry its own primer. If so, be sure to use it. Otherwise, a couple of coats of the same brand flat white will work quite well. Primers also reduce the amount of glossy paint you have to spray on the model. All in all, primers often make the difference between a so so paint job and a real eye catcher.

Paint Types

There are various types of paint can be used in finishing model rockets. Since some people have better luck with one type than another, we've decided to present a cross section of paints that we have used in the past or are currently using.

Dope:

This paint was a hold over from the early days in the hobby, when most folks were only familiar with model airplane techniques. As a matter of fact, it was the only bottled paint available in the Estes catalog for a number of years! Nitrate dope is rarely used today since it is extremely flammable, and since model rocketeers don't use corrosive motor fuels like the model airplane folks do. Burayte dope has become the hobby standard for dopes instead. Both types of dope

are hard to use because they are incompatible with many types of adhesives and other paints. Dope goes on extremely thin and takes many coats to get a good paint job. It's main advantage is that it is quite lightweight and provides a durable finish. It is a good choice for contest models, where weight is critical. Buy dope in spray cans, as it is much easier to get a uniform paint job with a can, than by brushing or airbrush.

Enamel Paint:

Enamel paints can be purchased today just about anywhere, under many different names and brands. The types that modelers are most familiar with are modeling enamels marketed by Testors and Pactra. These are paints made primarily for plastic models, and are not really suited for model rockets. They are heavy, coat large areas poorly, and are very expensive. They do have the advantage of having matching bottled paint available, and that you can get them just about anywhere, without looking too hard. These types of enamels don't stick to glassine body tubes very well, and will sometimes peel off when masked.

Krylon:

One of the best paints for model rockets is Krylon. It is a "lacquerized enamel" and has many of the good qualities of both a lacquer and an enamel paint. It is thin, doesn't discolor, masks easily, and has a consistent color from can to can. It also comes in large cans, and in a variety of colors, including a very good primer. The semi flat black isn't too good, but the gloss black is great. Krylon's drawbacks are that it can not be found in certain parts of the country, and that it has obnoxious fumes. It is also relatively expensive.

Skybrite:

SIG recently developed their "Skybrite" line of modeling paints, and they are worth a look. They have a sandable primer which works very well as a final coat of filler. The colors are brilliant, and there are many colors to choose from. It covers large areas extremely well, and is available in large spray cans. The big drawbacks to Skybrite is that it is expensive, and available only at SIG dealers.

Lacquer:

These are rarely used in model rocket circles any more, and for good reason. Lacquers require extensive thinning before use, need many, many (10 or more) coats to achieve color depth, must be airbrushed, and (unless you are using a self glossing type) must be rubbed out with rubbing compound to get a glossy finish. You can find a lot of interesting colors at an auto shop, but generally, lacquer finishes just aren't worth the effort or risk of a mistake.

Epoxy Paint

Years ago, when you talked about epoxy paints, you meant a paint that had to have Part A mixed with Part B. Hobbyepoxy and K&B still offer that type of paint, but it has to be airbrushed on. Some contest modelers swear by epoxy paints for altitude models, but most people have never used two part epoxy paints. It is just not worth the hassle.

Now, there are also air cured epoxy paints that require no mixing, and can be sprayed on. They go on thick, take a long time to set up, and are extremely tough and durable. Most of the household types aren't really good for modeling, but the Coverite folks make a "Black Baron" brand epoxy paint that is first class. It comes in a lot of colors, matches their monokote film colors, and is relatively expensive. Still, water, alcohol, and composite motor exhaust won't bother it.

Polyurethane:

Polyurethane paints are fairly new on the modeling scene. This is currently one of the most popular types of paint in the model airplane crowd, and it is slowly developing a reputation in model rocket circles as well. If you want a glossy paint job with no effort, this is the paint for you! Pactra sells the most widely available brand, called "Formula U". It comes in a variety of colors, has excellent color depth, goes on thin, and dries quickly. It, too, is expensive, and has strong fumes. Most hobby shops carry a polyurethane paint line nowadays.

Be warned about using polyurethane paints, however! If you plan to use one, prime it with a polyurethane, and don't mix any other type of paints with a polyurethane paint job. If you do, one of the paint layers will peel off when you mask or ding the model, and then the rest will follow. Polyurethanes "skin" over the surfaces it covers, and it is possible to peel a paint job right off of a bird if the primer was enamel. Don't mix!

Acrylic Enamels:

These are water soluble paints marketed by Pactra and Tamiya-MRC. While they are great for plastic model, most model rocketeers haven't used these paints. They are among the easiest to airbrush, however, and they clean up with water. The color selection is good, especially if you want camouflage colors, and they aren't that expensive. Most better hobby shops carry acrylic enamel paints.

Exotic Paints:

In this classification are brands such as Floquil, Humbrol, and others. They are paints formulated for a specific hobby, such as model trains or military miniatures. Generally, unless you need a special color for a

scale model, these paints are too expensive to consider. They do have more colors to choose from than other types of paint, so if you need a special color, this may be the place to look. Humbrol has colors such as "brick" and six shades of black. In most cases, these paints have to be airbrushed on. One exception is that Floquil offers a line of spray cans. The Floquil spray cans of flat white and gray primer are good choices for base coats, especially for detailed scale models. They go on smoothly and uniformly, and are relatively light.

How to Apply Paints

There are three common ways to apply paint: with a brush, with an airbrush, or from a spray can. Unless you are a Picasso, stay away from brush painting. Most people cannot do a good job with a paint brush. If you do need to use a brush, be sure and use a few coats, rather than trying to cover the area all at once. Anyone who has a nice paint job with a brush has obviously practiced a great deal.

Getting an airbrush for most model rocketeers is overkill. Unless you want to do detailed scale models, an airbrush isn't really necessary. The set up and clean up time can really become a hassle, and if you skimp on clean up, you'll find that you're painting this month's model with last month's color. Airbrushes also take practice. If you intend to become a master modeler, you'll want an airbrush eventually, but not having one is no excuse for a poor paint job.

That leaves spray cans. In the long run, spray cans are generally cheaper and easier to use than any other system. If you follow the directions carefully, and don't try to put too much paint on in one pass, spray cans can yield fantastic results. Probably 90% of model rockets are painted with spray cans, and for good reason.

Conclusion

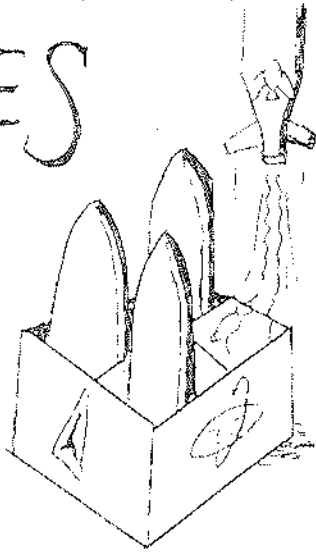
There are many ways to get that outstanding paint job that will impress everyone who sees it. Take your time to develop the techniques and materials that you feel comfortable with, and good results will follow. Experiment with other materials and techniques to see what works best for you. There are a lot of options out there; so there's no excuse for a poor paint job. Make your next model's finish a work of art!

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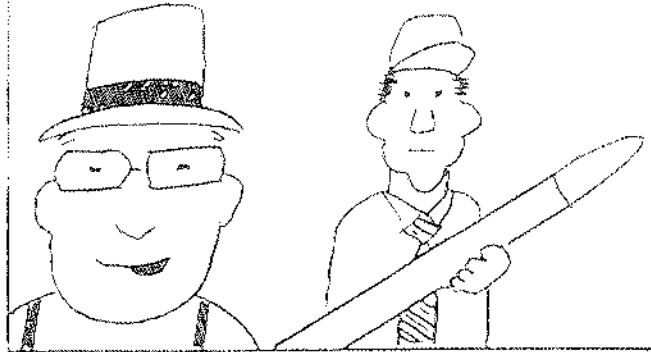
BARDLES & JAMES

PREMIUM
ROCKET
COOLER

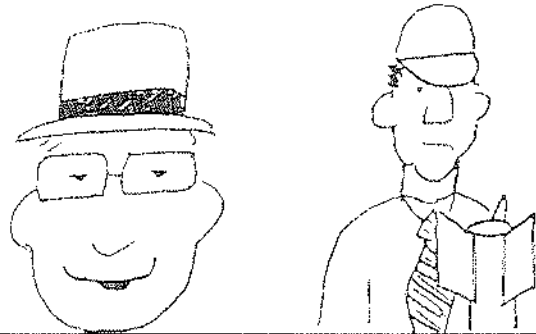


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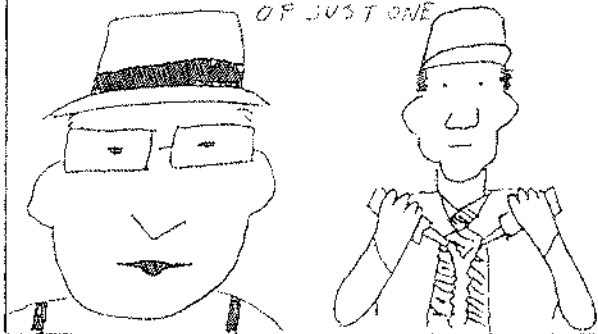
SINCE THE COOLER BUSINESS IS JUST A PASSING FAD, ED AND I HAVE DECIDED TO SELL OUT IN FAVOR OF A MORE PROMISING CAREER - HIGH POWERED MODEL ROCKETRY!



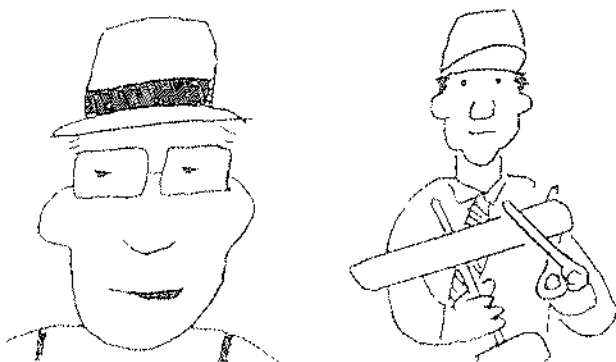
WE INTEND TO OFFER A FULL LINE OF ROCKETRY PRODUCTS, INCLUDING COMPOSITE ENGINES, JUST AS SOON AS ED FIGURES OUT WHERE THE O-RINGS GO.



IN THE MEANTIME, LETS LOOK AT A FEW HELPFUL SUGGESTIONS. ED TELLS ME THAT EPOXY WORKS A WHOLE LOT BETTER IF YOU USE A LITTLE FROM BOTH TUBES INSTEAD OF JUST ONE



WHEN TRIMMING GLIDERS, TRY TO USE THE SHARPEST SCISSORS YOU CAN GET. CLIPPING THOSE WINGS CAN BE REAL TRICKY.



AND FINALLY, WE HOLD IGNITORS IN PLACE WITH A QUICK SQUEEZE FROM ED'S HOT GLUE GUN. KEEP THOSE CARDS COMING IN, AND WE APPRECIATE YOUR SUPPORT



NAR TOP COMPETITORS

as of 1/31/88

A Division	NAR #	SEC #	PTS	WF
1 PATRICK BARRETT	43642	205	2,002	6
2 JOEL LEE BURGESS	36016	203	1,822	8
3 MATTHEW SIAS	43745	403	1,712	6
4 CHRIS WEAVER	41889	203	1,710	6
5 ANDREW BURGESS	43073	203	1,603	8
6 MARY K. BURGESS	39998	203	1,565	8
7 DON LINDER	35892	117	1,368	3
8 ANDREW LINDER	43406	117	1,284	3
9 ANDREA BAXTER	35488	IND	1,056	3
10 ELIZABETH BARBER	31154	205	1,026	7

B Division	NAR #	SEC #	PTS	WF
1 MARTY WILLIAMS	35301	403	2,624	6
2 LEE OLYNIEC	35214	403	1,892	6
3 TIM BARKLAGE	44211	475	928	2
4 JASON HAYNES	43119	403	722	4
5 KATHY KMETZ	PEND	403	628	2

C Division	NAR #	SEC #	PTS	WF
1 AL NIENAST	28820	369	2,196	5
2 WAYNE HENDRICKS	17818	403	2,085	6
3 JIM ZINGLER	28818	369	1,873	5
4 TRIP BARBER	4322	205	1,682	7
5 DANIEL COSGROVE	41172	205	1,522	6
6 DONALD LINDER	35893	117	1,488	3
7 MIKE KOWALEWSKI	37608	461	1,390	5
8 DAN DOMINA	50570	IND	1,382	4
9 BOB KREUTZ	35100	439	1,248	3
10 JIM SEXTON	35936	461	1,214	3

Teams	NAR #	SEC #	PTS	WF
1 LEE-PURCELL	241	203	2,878	8
2 ZUNOFARK	48	403	2,562	6
3 JANOVANDPAVLOV	251	IND	2,004	5
4 HONEYMOONERS	811	461	1,202	5
5 IRON BANANA	588	117	1,062	3
6 TNT	439	439	994	4
7 BROWN & BROWN	7	205	939	7
8 CRUNCH BIRDS	471	471	820	2
9 HIGHER STRAIGHTS	343	475	784	2
10 FLY-BY-NIGHT	15	475	642	2

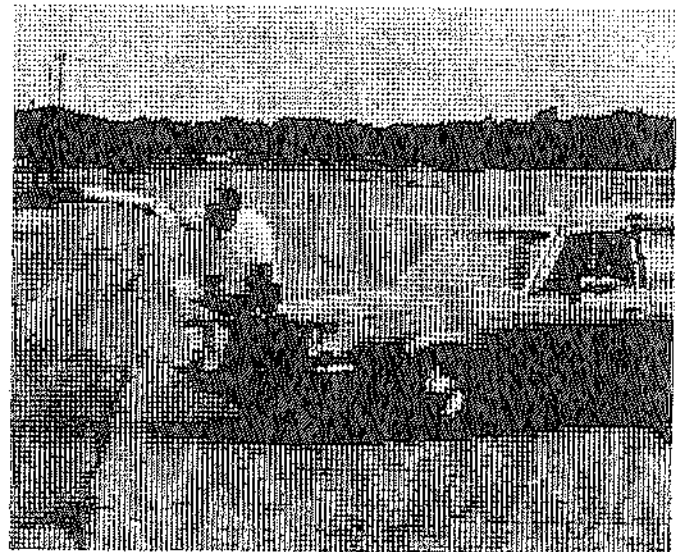
Sections	NAR #	SEC #	PTS	WF
1 HARA		403	16,418	6
2 VIKINGS		203	12,561	8
3 NOVAAR		205	11,735	7
4 NIRA		117	6,069	3
5 RED STICK ROCKET SOCIETY	475		5,406	4

6 WWAR	369	4,300	5
7 CENTRAL MINNESOTA	477	4,244	5
8 ASTRE	471	4,184	2
9 FORT WORTH	480	4,098	3
10 CAROLINA SKYWRITERS	461	3,888	7

Bold letters indicate strong contender for National Championship

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Proposed Pink Book Changes

This outline contains a summary of rule changes currently planned for the 1988 Pink Book. A number of topics, including changes to



the return rule and weighing factors are still under debate. Current plans would have these items being voted on in time to deliver finished copy to the printers April 1.

If you have any comments or questions, please write me at the following address:

Mark B. Bundick, Chairman
NAR National Contest Board
1523 Cleveland St.
Evanston, IL 60202

SAFETY CODE CHANGES - Wherever applicable, the limits of the new NAR-HIA safety code have been incorporated, e. g., 1500 grams liftoff mass and 125 grams propellant weight.

RULE 6 - SANCTIONED COMPETITION

- A new contest type, Local Meets, with a contest factor of one has been established.
- Contests must now be completed in three consecutive days, instead of the current two, to allow competitions over the full three day holiday weekends.
- Sections cannot fly more than 5 section and/or local meets a year.

RULE 7 - CONTEST OFFICIALS

- Timers and trackers must have "correctable vision", i. e. have vision capable of obtaining a driver's license.

RULE 8 - CONTESTANTS

- Contestants will not be able to proxy fly three new events: RC BG, Random Altitude and Random Duration
- Section affiliations will be determined from the section number on the member's card.

RULE 9 - ENTRIES

- Two items from BG and RC rules were incorporated here: (1) entries which are supported by aerodynamic lifting forces in a shallow climb are DQ'ed, and (2) spins or loops are only permitted around the roll axis.
- One piece fin units are now legal for use in competition.

- Booster motors can be used in non-booster stages
- Frequency control is required for RC events; use of AMA control procedures is recommended.

RULE 10 - OFFICIAL FLIGHTS

- Cluster models which fail to ignite motors sufficient for the total impulse of the event being flown will be "unofficial" flights.

RULE 11 - DISQUALIFICATIONS

- Catastrophic failures now include anything not under the control of the modeler, i. e. stolen models, having models run over by cars, etc.
- The "three misfire rule" which resulted in a DQ for three consecutive misfires has been dropped.
- DQ's for static reasons and "ex post facto" DQ's are now prohibited. If there is a static condition that would result in a DQ, the contestants will be given an opportunity to fix it.

RULE 13 - COMPETITION POINTS AND CHAMPIONSHIPS

- Track lost, Track not closed and no return flights, if not disqualified for other reasons, will receive flight points, but cannot place.
- The National Meet (NARAM) will now have a contest factor fixed at 8.
- Awards will now be given for the top four contestants for the year.
- The top five (5) pre-NARAM competitors in each age division will be recognized by the Contest Board.

RULE 14 - ALTITUDE DATA

- The full definition for an NAR approved theodolite has been consolidated into a single rule.
- Baselines are now defined to be between 25% and 200% of the expected altitudes with endpoints no different in elevation than 1% of baseline length.
- Explicit definitions are given for "Track Lost" and "Track Not Closed".
- If more than two stations are used, the scored altitude will be the average of all closed tracks, not the one set with the smallest closure error.
- Track lost/track not closed flights may be considered unofficial flights at the contestant's option, or will receive flight points assuming the flight isn't DQ'ed for other reasons.

RULE 15 - TIMING EVENTS

- The rules on no separations currently in every du-

ration event are now consolidated here.

b. Recovery systems need not fully deploy to be qualified, provided the model descends in a safe manner, and the recovery system action remains within the requirements of the event.

c. Stopwatches must not have resolution no coarser than 1/10 second.

RULE 16 - STATIC JUDGING

a. The following rules, previously repeated in all judging events, are now consolidated here in the general section:

-NAR number or contestant name on judged models must be judged for craftsmanship along with the rest of the model.

-Models are judged in flight condition; pop lugs are not considered to be part of the model.

-Damaged occurring to a model while in the judges' possession will not be counted against the contestant.

-If a contestant catches his model prior to landing, he will receive a deduction equal to the maximum damage points.

-A "No Return" flight will receive a deduction equal to the maximum damage points.

RULE 17 - UNITED STATES MODEL ROCKET PERFORMANCE RECORDS

a. Instead of a list of events, a new rule makes it clear records can be set in any event unless judging is required or a minimum score is the goal (e. g. Predicted Altitude).

b. All models setting US Records must be returned.

c. Separate classes of records will be set up for RC models.

d. Photo size is now set at 3" x 3" or larger.

RULE 18 - PROVISIONAL COMPETITION

a. Provisional events may now be included at NAR-AM by vote of the Contest Board, not the Board of Trustees

RULE 21 - SUPER ROC ALTITUDE

a. This event will be returned to the 1982 rules with minimum lengths, no maximum length, static scoring to be length in centimeters plus altitude in meters (no factors).

RULE 22 - PAYLOAD

a. The payload returns to the original lead cylinder 19.1MM +/- 1.1MM in diameter, the same as the FAI payload

RULE 23 - EGGLOFT ALTITUDE

a. The rule concerning reflights of previously flown eggs has been greatly simplified.

b. The rule requiring return of the egg makes it clear

that breaking the egg trying to remove it from a tightly fitted capsule, or inability to remove the egg results in a DQ.

RULE 24 - DUAL EGGLOFT ALTITUDE

a. Dual Eggloft returns with additional wording requiring a recovery system check by the RSO.

DESIGN EFFICIENCY/ALTITUDE EFFICIENCY

a. These events were dropped.

RULE 25 - EGGLOFT DURATION (see Eggloft Altitude)

RULE 28 - HELICOPTER DURATION

a. Pending a final vote, flexible rotors may be banned.

b. Entries which flip over repeatedly during descent are DQ'ed; one flip per flight is allowed.

RULE 29 - SUPER ROC DURATION

a. See Super Roc Altitude.

RULE 30 - PRECISION DURATION

a. Predicted Duration now has been renamed with three different events:

-Predicted Duration: same as now

-Set Duration: the CD sets the duration you must come closest to in the contest sanction.

-Random Duration: the CD randomly sets the duration you must come closest to.

Durations for Set and Random must be between 30 and 120 seconds in 5 second intervals.

RULE 31 - BOOST GLIDE

a. Flexwings have been given their own event, and are prohibited from here.

b. Class names, i. e. Sparrow, Swift, etc. , will return with D BG being named "Falcon".

RULE 32 - ROCKET GLIDE (see Boost Glide)

RULE 33 - FLEXWING DURATION

a. This event looks just like BG except entries must use flexible surfaces for their "wings".

RULE 34 - SCALE

a. Nonflying or inert prototypes can now be flown.

b. Fin thickness has been eliminated as a required dimension.

c. For "Accuracy of Major Dimensions", the rule makes it clear dimensions which cannot be measured within 1% tolerance should not be measured.

RULE 37 - SPORT SCALE

- a. Three classes of this event will exist:
 - Sport Scale: models of any size allowed
 - Giant Scale: models at least 100 CM long or 10 CM diameter
 - Peanut Scale: models no more than 30 CM long, or 2 CM diameter.
- b. Nonflying or inert prototypes can now be flown.
- c. Pending final vote, the 2 meter distance judging requirement may be dropped.
- d. Mission points have been increased to 50.
- e. General flight points have been decreased to 150.

RULE 38 - SPACE SYSTEMS

- a. Launchers, if included, can add up to 250 points to the score.
- b. The entry's nose cone must land in the recovery area, not just any part of the model.
- c. Space Systems scoring has been changed as follows:
 - static points + launcher points + flight points + altitude - altitude prediction accuracy factor - penalty points.

RULE 39 - PLASTIC MODEL

- a. Pending final vote, Plastic Model may be split into two classes; one for kits as per current rules, and another for original designs made of plastic materials. This could help alleviate the problems Plastic Model has today with a shortage of plastic rocket kits.

RULE 40 - SPOT LANDING

- a. The 10 Nt. -Sec impulse limit has been dropped.
- b. No practice flights are allowed.
- c. Models landing more than 50 meters away will receive only flight points; this closed a loophole in current rules that would allow everyone to tie for first if everyone was more than 50 meters away from the spot.
- d. No returns will be scored as if they landed more than 50 meters away from the spot.

RULE 41 - DRAG RACE

- a. There will be a flyoff for 3rd and 4th places.

RULE 43 - RADIO CONTROLLED GLIDER

- a. This event combines duration and spot landing. A contestant must land within 50 meters of the target or receive 100 points. Points will be added for every second over or under the target time set at the start of the contest, 2, 5 or 8 minutes. The lowest score wins. The event may include multiple rounds, pending final vote.

SNOAR ELECTS NEW OFFICERS!

SNOAR recently got around to electing yet another slate of officers. The only reason we do this is that the old officers got tired of answering the lawsuits.

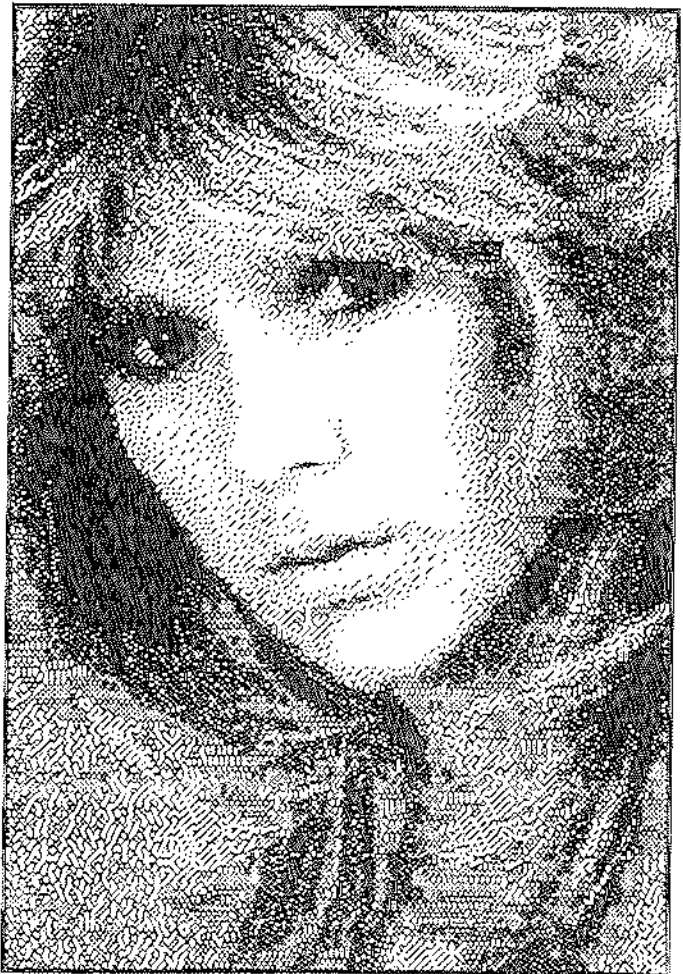
Following the traditions set by Gary Hart, the club's leading womanizer these days was chosen for President. Bob Ferrante was named SNOAR President, much to Bob's surprise. Right behind Bob, came the suspenseful Vice Presidential election. Dan Kafun won this one by a nose, nearly being edged out by "Don't Care".

In an absolute upset over Traci Lords, Samantha Fox was chosen for club secretary. We will be attempting to get ahold of Ms. Fox for future club functions.

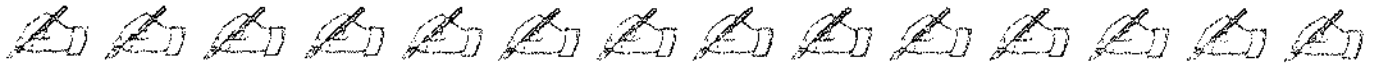
Chris Johnston was the day's big winner, picking up awards for Section Advisor and Treasurer. Chris is a repeat winner, which probably offers little solace.

The next elections are scheduled shortly after the Indians win the World Series.

Below: Samantha Fox was named SNOAR secretary.



Oh, We Get Letters...



Recently, Dan Mulholland wrote asking for more information about SNOAR. Since there is a widespread misconception that SNOAR is more of an outlaw punk band/motorcycle gang, I decided to set the record straight for one and all.

Here's my reply:

Dear Dan,

Thanks for your letter concerning SNOAR. I guess that the questions that you asked are often brought up when SNOAR is discussed. Hopefully, I can answer the bulk of your questions.

Is SNOAR really a club?

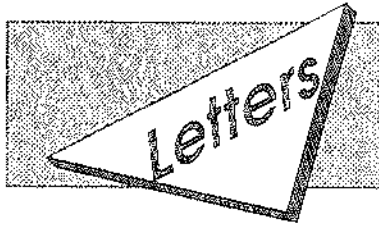
Yes, indeed. The Suburban Northern Ohio Association of Rocketry is an active, chartered NAR section (#337) with more than 35 members. SNOAR was formed in late 1972, making the club over 15 years old, one of the NAR's oldest.

Is it a national club?

Well, SNOAR didn't start out to be a national club, but as it grew older, it also grew out of the Cleveland-Akron area. All of the members of SNOAR lived in the Cleveland-Akron area at one time, but many members moved as a result of school, jobs, or the military. So now, SNOAR claims as members Jim Gazur (the first editor of SNOAR NEWS, who now lives in California), Matt Steele (now employed in Alabama), Brad Bowers (California), and Jim Backlas (now working in New York). Still the bulk of members live in Northern Ohio and meet regularly. SNOAR also likes to host a Christmas party so that both local and out-of-town members can get together.

What is the age range of its members?

SNOAR has evolved into an older club, no longer having a significant number of A Divisioners. We literally "grew our own", as Bob Ferrante (A Division National Champion at NARAM 22) is still a strong member of the club. As a result, our members generally are past puberty and own their own sports cars.



What are the interests of SNOAR's members?

Well, I'd say women, fast cars, booze, rock-n-roll and rockets, though not necessarily in that order. Oh, you mean rocket interests? I'd say that high power holds most of our attention, as we seemed to have burned out on intense competition since NARAM 22. Antagonizing the hobby's jerks has always been a club priority. Radio control, computers, basic research, and cat lifting seem to round out the list.

Do you have launches and meetings?

Yes, we meet every 4th Saturday of the month at the Euclid Library with a "Lunch and Launch" (cute huh?)

How long has SNOAR NEWS been in publication?

SNOAR NEWS has been in continuous publication for 14 years now. What started out as a simple club newsletter has evolved into a high tech, no-holds barred club newsletter that's distributed nationally to keep the SNOAR membership informed. As such, we don't run as much of the usual things that clubs run (like meeting minutes, who got pregnant last month, plans for converting toenail clippers into igniter cutters, and pictures of people who finally learned how to paint a model with having the paint run). Instead, we try to keep our readers up to date on the latest news and advanced rocketry. SNOAR NEWS is really nothing more than that, although a single issue (graciously autographed by Mary Roberts) went for \$16.50 at NARAM 28. SNOAR NEWS probably has the largest paid subscriber base of any rocket publication (outside of AMSPAM) and has since 1978. SNOAR NEWS has been edited by such notable SNOAR members as Jim Gazur, Alan Tuskes, Chris Pearson, Chris Johnston and Matt Steele, and now, JD McNeil.

So, that basically answers your questions. I have sent a copy of this letter to Chris Johnston, our resident high command leader, who may have some additional comments. Also, I have been toying around with writing this for several months, and so, I'll probably turn this into an article to run in a future issue. As such, your name will probably hit the big time... the credits!

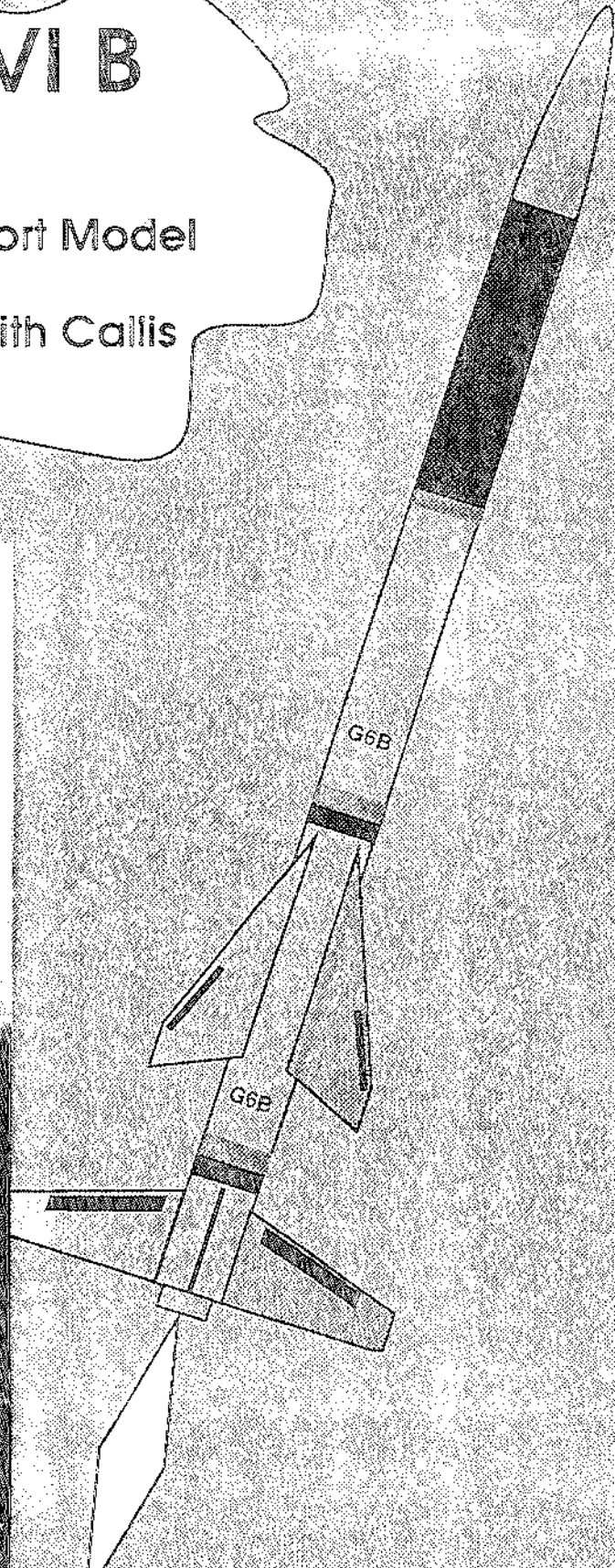
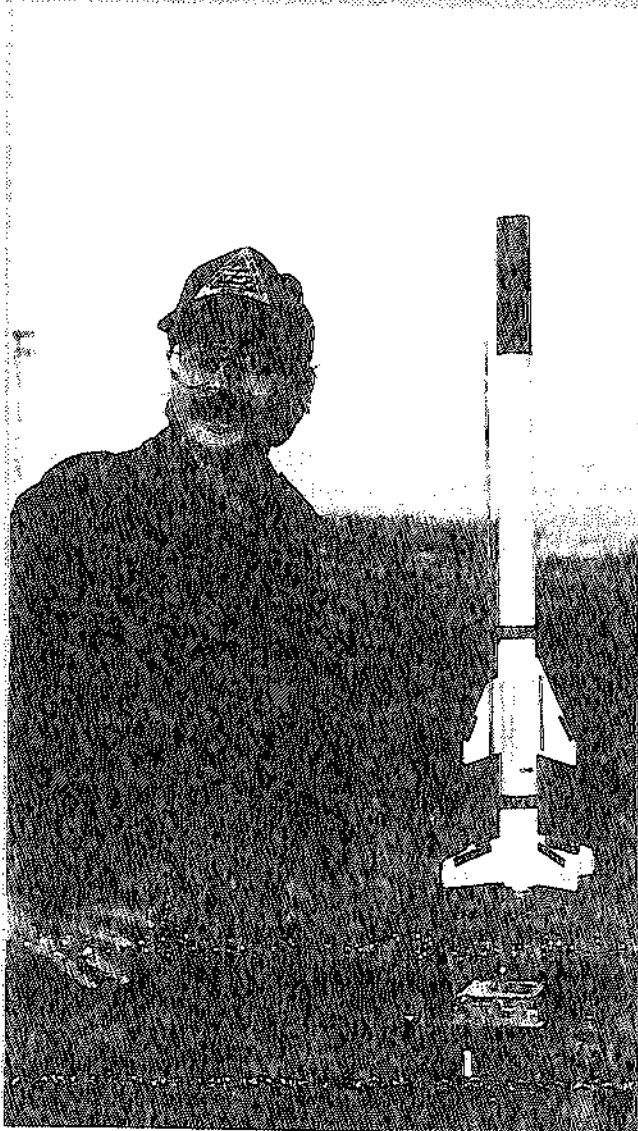
Then again, probably not.

Matt Steele
Former Editor, SNOAR NEWS

The G-VI B

A High Power Sport Model

Designed by Keith Callis



The G-VI B is a high power sport model with sleek military sounding rocket looks. Keith Callis of Grand Rapids, MI sent this to SNOAR NEWS, and as you can tell, it's a real beauty.

Some basic specifications:

Overall Length: 41.25"
 Overall Width: 10.0"
 Center of Pressure: 15.5" from rear
 Model Mass: 10.5 oz

The following parts are required to construct the G-VI B:

Main Body Tube: NCR BT-18
 Nose Cone: NCR NC-9
 Fins: 1/16" Sig Plywood

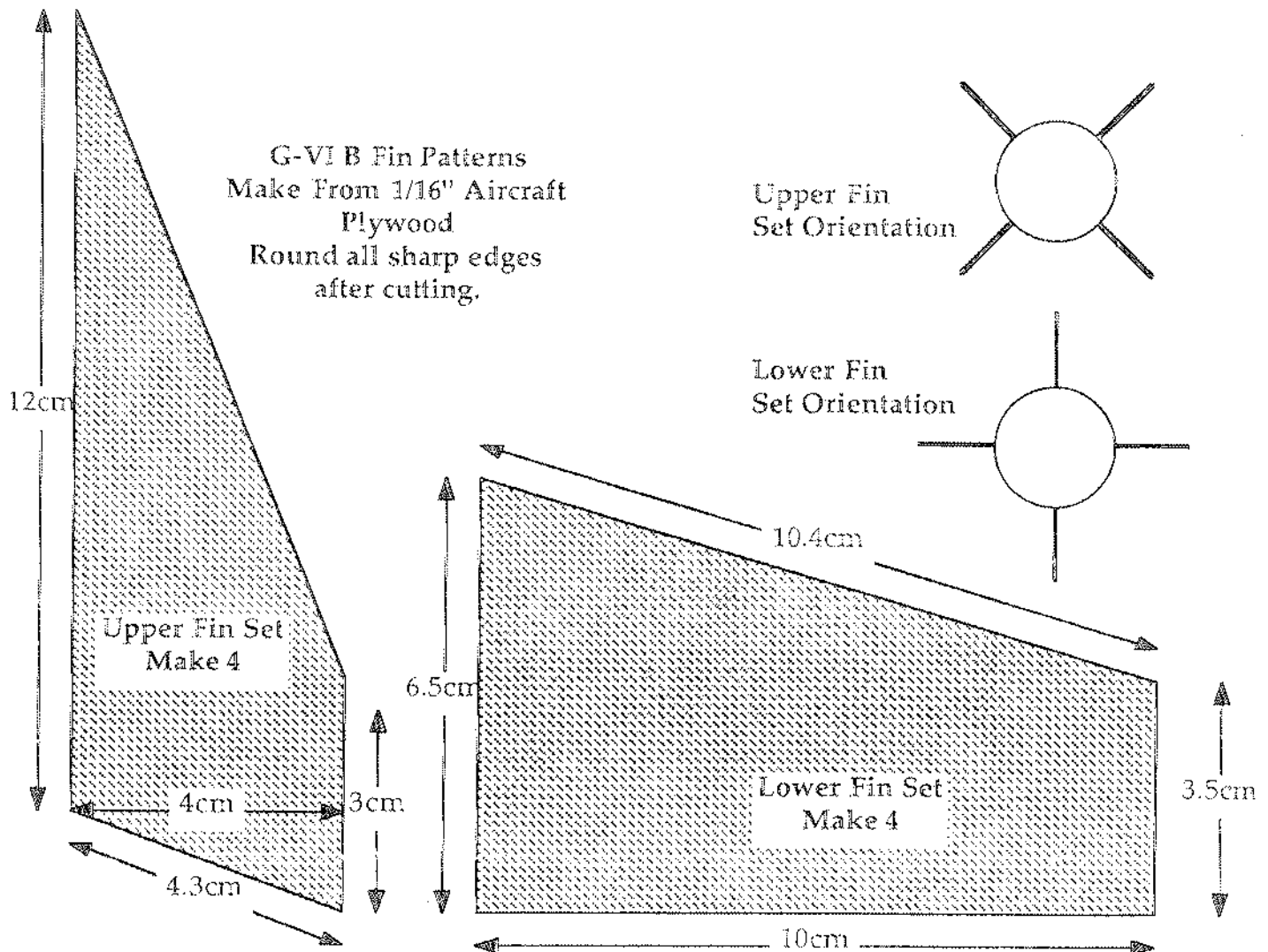
Motor Mount: NCR BT-9
 Parachute: 18" or 24" NCR Cloth Parachute

Note: This design requires approximately .5 oz. of nose weight for proper flight.

The fin patterns are all shown as square edges, but these should be rounded with #220 sandpaper after cutting them out to achieve the proper effect.

Suggested Motors:
 D12-3
 E10-4
 E28-4
 E50-5

Keith says that he patterns most of his sport designs from current NASA, ESA, and Japanese space boosters. We also have some other plans from Keith that we will run in the future!



Better Late Than Never Department

New Year's Resolutions for 1988

1- I will not smoke inside model rocket payload sections, unless they are well ventilated.

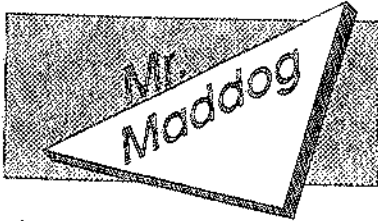
2- I will not name my rocket designs after famous Western movie animals.

3- I will not try to use my "Mutual of Miller" credit card in fancy Bulgarian restaurants.

4- Mars needs women.

5- So does M.I.T., har-har.

6- I will try to learn the names of all of the trustees



who have tried to help our section, so that I can support their re-election efforts.

7- I will not refer to Elaine Sadowski in any future MODROC songs.

8- I will not fold, spindle, or mutilate any low numbered NAR members unless provoked.

9- I will not refer to G. Harry Stine in any editorial cartoons.

10- I will not throw Enerteks in the pool (This does not keep me from throwing Lee Piester in the pool, however).

That's enough for one lousy year, don't you think?

What sort of penguin reads SNOAR NEWS?



From Your Sometime Sober Editors
(Continued from Page 2)



By the way, this is the first issue since the blockbuster (and back-breaking) Sep/Oct/Nov 1987 issue, despite what the cover date might say. Don't worry, though,

as fresh help will see to it that you get all six issues by NARAM 30. As we enter our 14th year of publication, it is not suprising that editor #6 (after Jim Gazur, Alan Tuskes, Chris Pearson, Chris Johnston, and myself) has finally come on board. I would like to wish JD good luck as editor, and I hope you'll support him as you have supported me.

One of JD's first efforts was to give the newsletter a

whole new fresh graphic look. We hope you enjoy the changes.

One additional note is in order. In the last issue, the editorial column entitled "Don't Criticize in Public", it was not my intention to embarrass Pat Miller. Pat's letters to me were private communications between the NAR President and an NAR Trustee. I should not have discussed them in SNOAR NEWS. Sorry about that, Pat. Hopefully, the editorial change will help eliminate foul ups like this in the future. Also, a measure of thanks is in order for all of you who have supported me in the past. Keep it up! We'll still need it!

Look for JD to take potshots at Estes, MRC, the Board of Trustees, Jerry Irvine, Mark Bundick, Tripoli, Mark Weber, and anyone else who steps out of line in the future. He's just that kind of guy!

Met: "The Man of" Steele and Mac II

Mr. Maddog says: "I told George that I could turn any comic strip into a rocket cartoon"

"Not the Phantom!" he said.

"Yup, even the Phantom."

"Well, not Prince Valiant!" he countered.

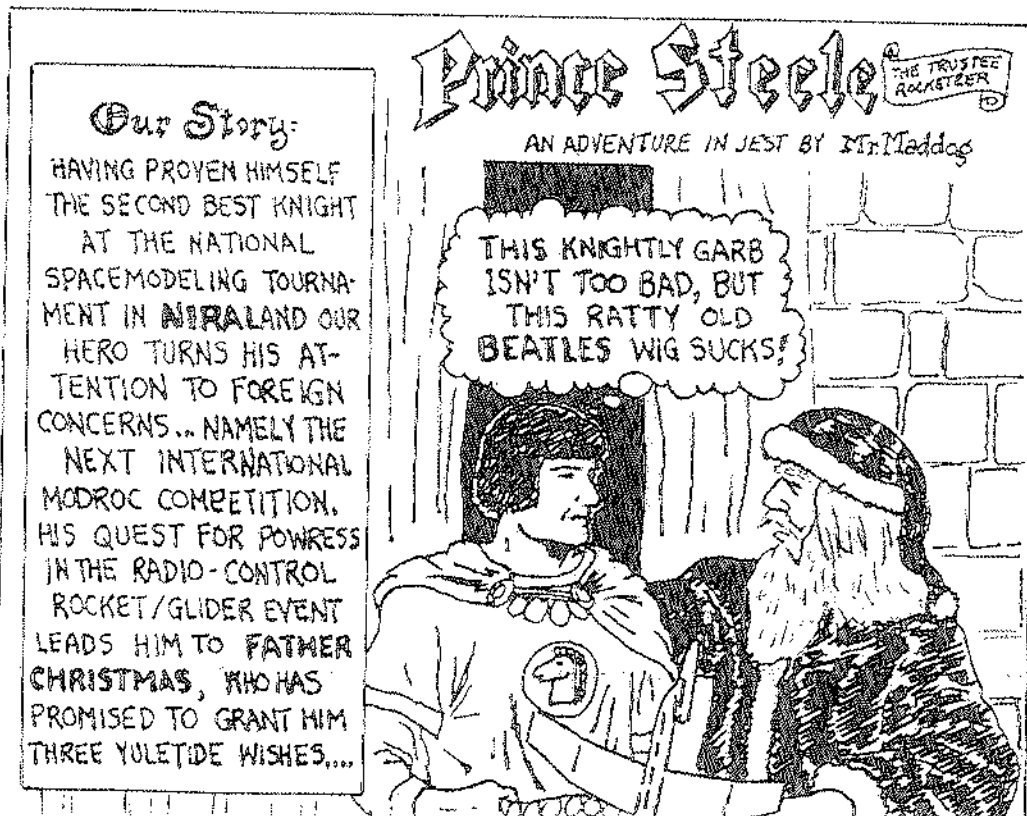
"Wait a minute..."

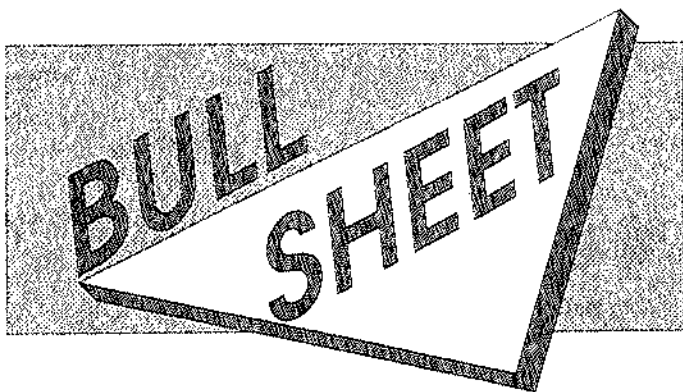
"Aha!"

"OK, I can even do Prince Valiant."

"No!"

Well, folks, here's the proof. Am I right?





If you haven't gotten your 1988 Estes catalog by now, you must not be on their mailing list. Estes is taking an exciting direction in the "Post-Dane Boles" era. Estes seems to be making an effort to reach out and interest the post puberty modeler. Of course, the best evidence of this is the new (as foretold by SN) Saturn V. Cynical readers (our staff included) read the catalog text and thought "Yeah, Estes claims that their Saturn V was the first and the best, but we all know that the Centuri version was much better." Well, folks, according to Mary Roberts of Estes, Keith Niskern designed the CENTURI Saturn V, which is what they are referring to in their literature! If the new Estes Saturn is better than the old Centuri kit, it must be one whale of a kit! Get your \$47.95 in the mail!

In the wake of Enertek's kit announcements, the Estes Saturn V looks like a price bargain. The first Enertek kits will be available in early April, with others to follow in June and August. The glossy brochure we got looked good. The kit making the biggest impression was the 70.7" tall Nike Cajun (August release date at \$69.95). Other good looking scale kits included the Astrobee 1500 (3.5" diameter, 46.5" tall, June release at \$59.95) and the Arcas (2.5" diameter, 48.8" long, August release at \$39.95). Other kits include the Anvil (April, \$36.95), Big Thunder (April, \$47.95), Emanon (June, \$34.95), Initiator (April, \$24.95), Strong Arm (April, \$39.95), Grand Slam and Aero (both available in April at \$19.95), the Raven (August, \$34.95), and the Astra 2000 (June, \$29.95). The Mantis Launcher is unique looking, and goes for \$49.95, along with the Access Launch Controller (\$24.95). E15 motors are \$9.95 for a 2 pack, while E30's are \$11.95. F25's are \$7.95 each, F60's are \$8.95, and G40's are \$10.95. The top of the line motor is the G80, which goes for \$12.95. Interestingly enough, Enertek has chosen not to follow "industry" standards, using 2.0", 2.5" and 3.5" diameter tubes. The motors are also 30mm, rather than the standard 29mm, which means they won't fit into your current high power model until you peel a layer of paper out of the tube. Other highlights include a strip type igniter, lite ply precut fins, interlocking motor

mount/fin mounts, and ejection baffles. Everything is done first class, which was expected from the old Centuri clan. What wasn't expected was the astronomical prices. To quote Mr. Maddog: "I have seen the future of high power, and I can't afford it!"

Everyone's been asking about CMR, but no one has firm answers. Independent sources confirm that Howard Kuhn has closed up shop as of 1/1/88. There are a significant number of people who have orders 5-6 months old, with no delivery in sight. We do understand that CMR may be bought out and re-opened, but the details of who, when, and how much are unclear. Until then, don't bother sending money to CMR.

Ravenna Rocket Research is a new motor manufacturing company that claims to have a \$3.95 composite motor. Don't rush out to buy any, though. The motors are not NAR certified, and field reports indicate that the reliability of recent batches was quite poor. We'll keep watching to see where RRR goes.

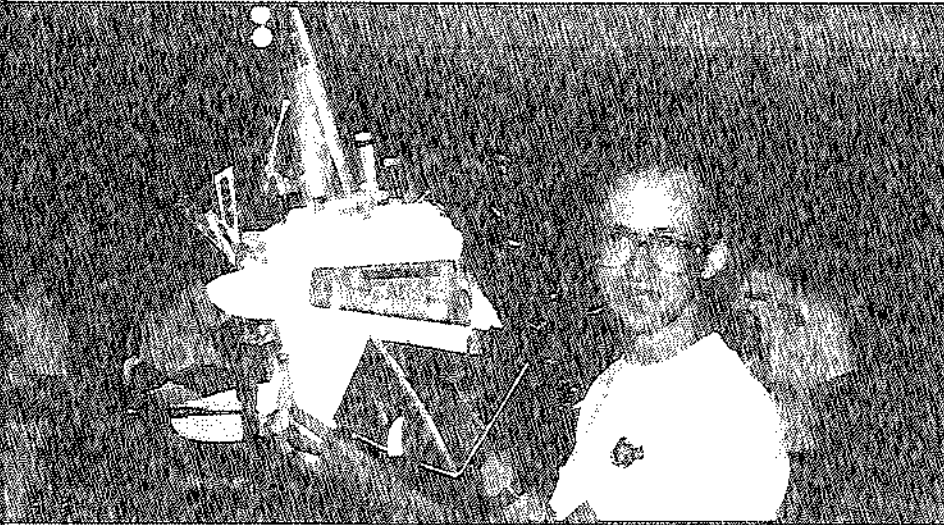
We also just heard of a significant shakeup at Aerotech/Enertek. Seems that Jim Dunlap has left the company in a dispute with owner Gary Rosenfield. No word on how that will affect Aerotech/Enertek's operations.

Chas Russell has moved on to the European continent, to keep all of us peace loving people free. It looks like he'll be there at least a year, tweaking those lovely nuke'em cruise missiles. Drop him a line at: Msgt Charles Russell, 485th TMMS/LGMAA, APO, NY 09188. Speaking as someone who's been there, I know he'll appreciate it.

Brad Bowers would like to thank SNOAR for a "real surprise at our wedding". Seems that Bob Geier and Bob Ferrante made the trip to Brad and Sandy's happy event. As duly appointed SNOAR representatives, the happy couple are now proud owners of several Estes kits and a plastic X-15. Brad says he's going to get Sandy involved in the hobby by hook or by crook. By the way, Brad is now a cool dude, hanging his hat in sunny California. You can reach him at: 13109 Kornblum Ave, Apt# 14, Hawthorne, CA 90250, or by phone at (213) 973-6355.

No word yet on increase of the Steele clan by one, but it should happen any day. Also surprised to find that a little one on the way was Doug and Jenny Pratt (their first, due in July) and Pat and Ginny Miller (not their first, due in the late September). Although the results of the studies are not complete, this phenomena may be connected to composite motor exhaust!

NARAM 29 Photo Spectacular!!!



Left:

Bob Sanford proudly displays the NARAM 29 Best Midwest Qualified Flight ("Prang"). Bob won this "prestigious" award by putting a 1/2A6-2 in his B Eggloft Duration. The results of the flight were quite predictable. Ric Gaff, the RSO that checked the engine, said he didn't notice, but we really think he just let it fly for the hell of it.

(Robyn Steele Photo)



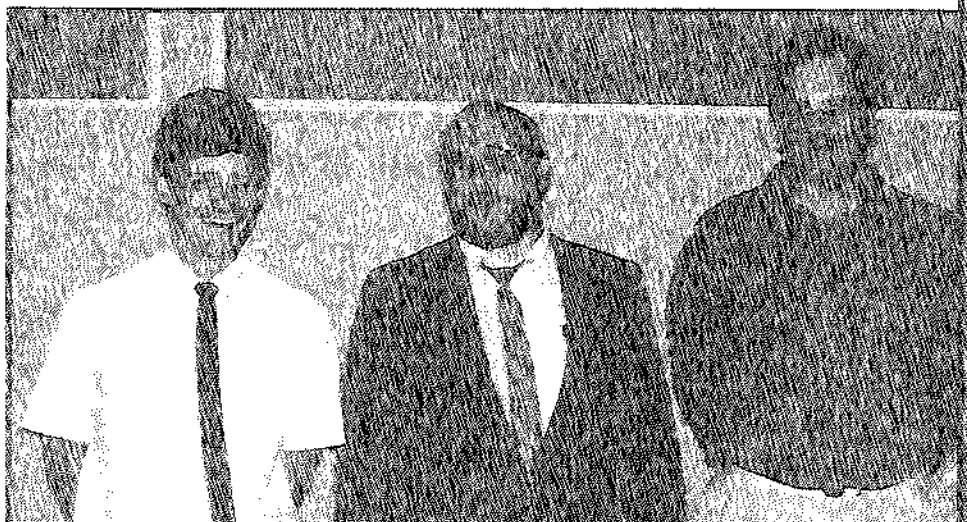
Above:

Dan Kafan and Matt Steele recover the Project Pilgrim from a successful flight.

Right:

Three members of the SNOAR High Command made it to NARAM 29. From left to right, Brad Bowers, Matt Steele, and Dan Kafan. Please note that this photo is PROOF that at least two SNOAR members own ties!

(Robyn Steele Photos)



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The Leader in Spacemodeling

*Model Rocketry's
Longest Publishing and
Most Controversial Newsletter*

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