



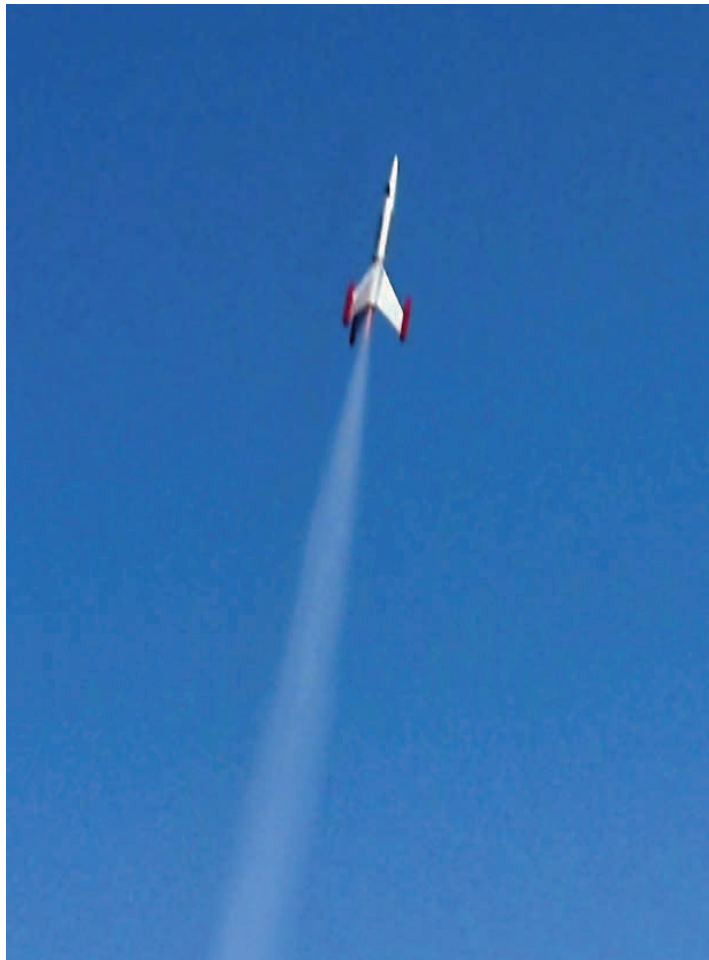
Member - National Association
of Rocketry ("NAR").

Special points of interest:

- "Ignition!"
- Gary Briggs lets us in on his technique for fiberglassing fins!
- Stuart Powley pulls some pics from the vault and finally writes up his Maxi Vector V!
- The DARS Bloomin' Open is coming up!
- We have February launch pictures too!

Ignition!

By J. Stuart Powley



A Red River Rocketry "Red Shift" scoots into the air at the February 2011 Launch.

Inside this issue:

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Here we are in a whole new year of rocket fueled fun! By the looks of the issue number, *Shroudlines* has been going for twenty years now! Before we had *Shroudlines*, we had *Dallas Rocketry* and before that we had several other publications (*Stratoroc*, *Stratos*, etc) In other words, DARS has a long history of newsletters.

Speaking of history, John Dyer is now our club historian. He has been around as long as DARS and is uniquely qualified for the role. He is now collecting items to fill out the

library, so if you have anything of historic interest, I'm sure he would be interested!

In this issue we have several cool things. First, Gary Briggs gives us an article with the longest name in the history of newsletters (well, maybe not, but its pretty long). It covers fiberglassing fins! I have a piece about my Maxi Vector V, and we have launch pictures to round everything out. So sit back, and enjoy, and dream of flying!

Adventures in Rocketry – The Smashed Under Glass Technique to Fiberglassing Wood Fins

By Gary Briggs, NAR 76909, L2

I don't know exactly where I picked this technique up, but suspect it was either in one of the magazines or online forums. It is one that I have used a number of times over the years to strengthen and smooth light weight material fins, to add durability and simplify finishing. I keep telling myself that I will eventually purchase a Seal-a-Meal and do this via vacuum bagging, but until I make that investment, this is the cheap and easy way to similar results. It will create fins that are probably as strong, although slightly less smooth and certainly a bit heavier than the vacuum bag approach. Still, for building your average field flier, this tip does the trick and is much simpler and cheaper to pull off. I have used this technique over balsa, basswood, and plywood. You don't end up with full G10 durability when you are finished but you do have a much stronger fin than any of the original materials at a fraction of the weight you would get with a solid G10 fin. Note that this technique is about making the fin stronger, not about making the attachment to the rocket stronger. That one is for another day.

Before I get into the approach, the disclaimer. Epoxy is dangerous. It may not get you right away but it will get you through repeated exposures over the years. Do yourself a favor and take precautions so that your hobby doesn't be-

come an ailment in future years. Protect your skin from coming into contact with epoxy. Gloves are a must. Latex is too porous and will actually allow epoxy to bleed through to your skin in heavy contact scenarios, so use Nitril. It is also bad to breathe epoxy for extended periods of time so work in a well-ventilated area and use a respirator. You can get a decent one from Home Depot for use with chemicals for around \$40 and it is a good investment if you plan to work with these materials much. Surprisingly, fiberglass, carbon fiber, and Kevlar cloth are all also dangerous. The fibers created when cutting and sanding these materials are not good for you lungs (can you say Silicosis?). Wear a dust mask when working with these materials. Finally, none of this is any good in your eyes, so wear some protection there as well. 'Nough said, I will step down from my soap box now.

I have been a fan of Aeropoxy since watching the Shadow Composite videos, many years ago. The stuff is designed for hand layup applications of composite materials for use with real aircraft construction. It can be heated in the curing process to make it even stronger. I have kept it in my garage for like 3-5 years, and other than the hardener becoming somewhat discolored, it has always worked great for me. I just got myself a fresh supply here

from Aircraft Spruce. It is about \$40 plus shipping, but will cover many rockets and fins.

The glass cloth in this case is 2 oz fiberglass that I bought a ton of, in a group purchase several years ago. I use this on model and mid power rockets. A recent example of the improved durability this provides would be my TLP Exocet MM40 which has a couple of wraps of this material on it. When only 1 motor of the 2 motor cluster lit, it made a face first landing on a relatively hard field in Frisco. In doing so, it destroyed the nosecone, but only damaged the first six inches of the airframe. Everything else was fine, so part of this exercise was to create a new front end for that rocket, now as a payload section. Had this been the standard BT80 tube that this kit came with, I suspect I would be re-kitting back to the motor mount.

As mentioned in my last article, my bench has a piece of glass on it (door from an old entertainment center) that I use as a flat surface for a number of things like sanding fins, gluing up multi-part fins, and this approach with fiberglass. I cut out a few pieces of fiberglass for the fins in question. I admit that I could certainly do this with less material, but I have so stinking much of this stuff that I am pretty generous with what I use. In this case I tried something new, and adding some Kevlar tissue strips to one side to add some additional stiffness. This stuff is pretty amazing and easy to work with in this format. I have some tubes that I rolled

in this material that I swear you could shoot bullets out of if you wanted to. Anyway, that is the yellow material you can see in the pictures.

Basically, I mixed my epoxy and did a quick double wrap on the short section of tube. Then I turned my attention to the fins. Aeropoxy gives you 1 hour of working time, so there is really no issue in working multiple layups here. With this technique, I put down a piece of wax paper over the cleaned glass (to ensure minimal irregularities in the fins from something poking into them), followed by the bottom layer of glass. I covered the fins with a generous layer of epoxy and put them face down on the fiberglass. I then cover the top of the fins with epoxy, and arranged the Kevlar strips, followed by the top layer of fiberglass. I should mention that I typically use a cheap brush from HD or Wal-Mart to spread the epoxy. You can pick them up for a buck or less depending on the size you use, and toss them when you are done. I use the brush to work the epoxy into the cloth, brushing away the excess. The experts will tell you here that shiny is bad since it means you have excess epoxy on the surface of the glass. This means more weight and more sanding potentially.

With the glass all wetted, we now move on to the "smashing" part of this technique. I now cover all of the wet epoxy with another piece

of wax paper, making sure that it is smooth and wrinkle free over the fins. I then take a piece of clean plexiglass and cover the wax paper, ensuring that the fins are well covered under this. The final "layer" is a couple of cans of paint, to add weight to the whole stack. The theory here would be that the weight will help to push excess epoxy out of the fiber as well as level everything out to provide a smooth surface.

After everything has dried for about 2-4 hours you can come back and start taking things apart. Once everything is dry, the wax paper should peel right off the fiberglass. From there I cut the fins out of the excess material with scissors or a hobby knife and start working them down from there. Finishing from here on out is pretty much like any other fiberglass fins other with the precautions noted above. Note that in this case, I did not attempt to wrap around the leading edge of the fins, but have done that in previous scenarios as well.

That is all there is to it. You now have some very durable fins. Case in point, the first flight of my Snarky was good up until the point where the parachute did not fully open. The landing was flat on the tail, and caused it to flex enough to separate from the tube. This was a glass over balsa fin. I was able to spot repair the fin by pushing the glass back together and reattaching the fin to the body. Had this been only balsa, I am

certain it would have completely broken, and required a more extensive repair. Note that to save weight on this rocket, the tube was not glassed.

Hopefully that gave you the information that you need to attempt this yourself. Please contact me if you have any questions.

Please go to the next page for an illustrated guide of the process!

Coming Soon!

DARS Bloomin' Open!

March 12, 2011

Events:

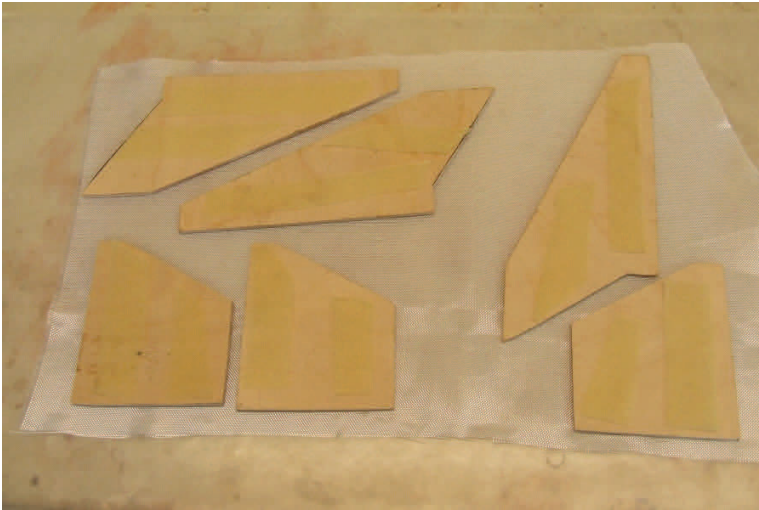
C Rocket Glide

A Helicopter Duration

C Eggloft Duration

Drag Race

Come on out and show off your rocketry skills (or luck, whichever works!) Anyone can compete, and NAR members will be given national contest points for the event. There is a rain date of March 19, should the skies decide to open up. We hope to see you there!!!



1. Fins lay our over glass with Kevlar strips



4. Weight being applied to the stack



2. Glass over everything (not wetted)



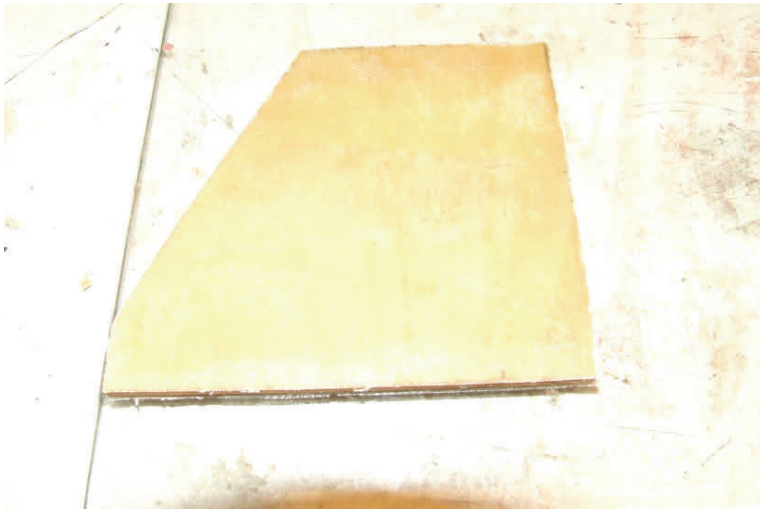
5. Finished materials ready to cut out



3. Plexiglass over layed up materials



6. Rough cut on fins



7. Tried to get a picture of smooth, but didn't really get it



Top: Snarky after hard landing

Left: Repaired tail section of Snarky

All photos by Gary Briggs

The Maxi Vector V– Now the Tale Can Be Told!

By J. Stuart Powley NAR 29573

Four years ago I decided to do an upscale on the Centuri Vector V. As I built her, I took pics and planned an article for Shroudlines. However, when it came time to actually write the article, I couldn't find my pictures anywhere! Well, recently while I was going through my piles of backup CD's looking for something totally unrelated, I found them! Therefore, I am proud to introduce after several years of incubation, The Maxi Vector V!

The story of the Maxi Vector V starts (as so many of my stories seem to) with a tragedy. It all began when I decided to fly my Semroc SLS Laser X on a Roadrunner G80. This was to be its first flight, and I wanted it to be spectacular. It was, but not in the way that I intended. I guess it held together for about fifty feet before erupting into a glorious display of what the phrase "parts is parts" is all about. Lessons learned: 1. Read the recommended engine list. 2. Roadrunner G80's really are full G's. 3. The "speed of balsa" is directly related to the size of the fins. Sigh.

I vowed even as the parts were fluttering from the sky to rebuild her, and I did. She has flown at least four times since then with all combinations of motors (but no more G80,s). You might be asking yourself at this point, "What the heck does this have to do with an upscale Vector V?" Well, fear not, I'm getting to that. Really.

In order to rebuild the Laser X, I had to buy a new one and combine the parts. The Laser X, as it

now exists, is about half original model and half "Steve Austin-esque" parts. The practical upshot of this situation is that I had a bunch of parts left over. (I'm pretty sure they didn't have that problem with Steve). Anyway, the more I looked at those parts, the more I started seeing another rocket altogether. The parts distinctly reminded me of...wait for it....the Vector V!!! (see, I told you I would get there)

Released in 1972, the Centuri Vector V was a favorite of mine from childhood. I seem to remember brush painting it in my room, and having it actually look pretty good! It's probably for the better that it flew off to parts unknown because I'm pretty sure that my older, more critical eyes would have seen it as it really was. Still, in my memory, she is beautiful. Those sharp angles, five funky fins, and red, blue and silver paint scheme really epitomized 70's sci-fi to me!

The first step, of course, was to figure out the actual scale of the thing. I was going to enlarge a 1.34 inch tube to a 2.34 inch tube. I ran the numbers through my handy-dandy scale program and came up with a 179% upscale. The cool thing was that the scale actually followed for the smaller tube as well. The length went from 12.6 inches to 22.5. All in all it's not a huge jump up in size, and if you haven't

seen the Vector V in a while you might not even notice that she is about double her normal dimensions. I also doubled her power (of course) and now she flies with D12-5's.

After I figured out my scale, I started to get the parts together. The smaller upper tube would be scavenged from my unused Laser X parts, as would the larger, lower tube. Ironically enough, the really cool balsa adapter from that kit (which was perfect in its dimensions and really gave me the idea for the project in the first place) was damaged in the G80 fiasco and would not work for the new project. I decided to go with a card stock transition instead. This was closer to the original construction methods anyway. The centering rings would be salvaged parts too.

I found a nice BT-50 plastic nose cone that was close to the proper scale to use as well. The only problem with it was that it was about an inch too short. To solve this problem I simply added an



The nose cone with extension

inch of BT-50 to the cone and put a shoulder on the bottom of that. I sanded and filled it so that it pretty much looks like a single unit.

The original Vector V had fiber fins that allowed you to attach them in a variety of ways, since you didn't have to worry about the grain. The idea was that this was a completely customizable kit, and the instructions give you hints for ten different configurations (although more could be made by combining some of the ideas). I, however, built mine to match the illustration on the

For fins I used basswood (yes, I did have to worry about the grain). I left the edges square to replicate the edges of the fiber fins, which could not be rounded very well.

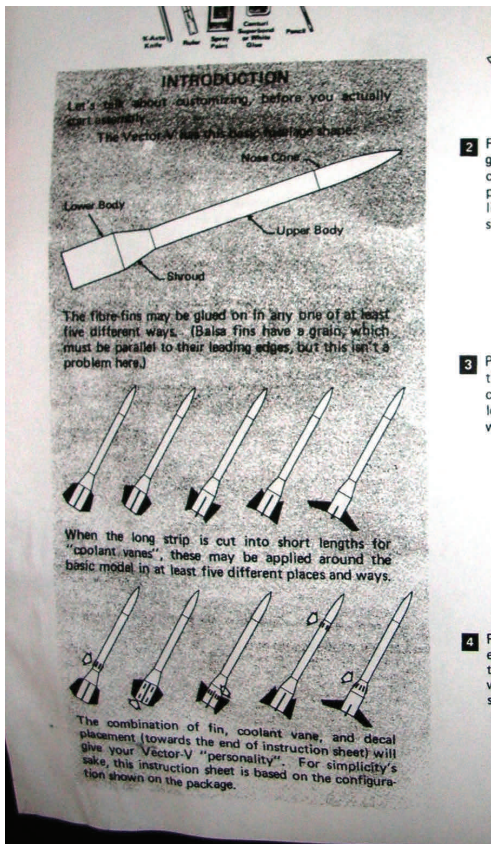
For the "cooling vanes" I used some scrap balsa. I simply cut it to length and marked the tube with my fin guide program. They were very easy to glue on.

The original model is a bit unusual in that it has the top tube coupled to a separate engine tube. It seems like it would be easier to simply extend the length of the top tube to include an engine compartment. Of course, this is what I did. The model is also a bit unusual in that it is reminiscent of a hoop skirt design (at least to me, maybe I'm just weird) In that the bottom tube is simply a façade piece surrounding a minimum diameter rocket. Still. It looks cool. I used a face card off of an old model rocket kit for the transition. I find this material is easy to work with and it's smooth enough to paint well.

I upgraded the recovery system by using Kevlar and sewing elastic. I also used a small orange nylon parachute that I had laying about. I have no idea where it came from, but it works well.

Next I focused on the decals. They were pretty easy to do, since they are only printed in black. I simply plugged them into my Paintshop program, entered the appropriate scale and printed them out on Testors decal paper. After hitting them with sealer, they were ready to go!

Next came the paint. I chose the "Challenging" paint scheme from the old instructions. If my memory serves correctly, this was the scheme I brush painted on my original bird. The lower fin section is metallic blue, the shroud and main body are silver, the coolant vanes are flat black, and the nose is metallic red. In order to get the metallic paints to look



The original instructions showing the suggested fin configurations

package when I was a kid, so that is what I decided to do now.



Tube and shroud arrangement



Finished filled and sealed, without paint

right, I actually painted the whole model silver to begin with, so that the translucent metallic paints would look brighter. I painted the nose separately from the rest of the model and masked off the lower body as needed. No, I did not use brushes. The decals went on easily and after one last coat of clear, she was done!

I entered her in The Fall Classic in 2007 and actually tied for first in the open category! I have flown her exactly twice (the last



With paint and decals!

time was at the February launch so that I could get a picture for this article. Thanks John Dyer for the D12!) The only quirky

thing about her flights is that due to a slightly warped fin, she has a slight spin. She flies quick and high on D12-5's.

That, therefore, is the story of my Maxi Vector V. It took four years to get it on paper, but now it's done. It just goes to show you, no article is ever really dead. Hopefully this has inspired other potential articles! We'll take 'em!



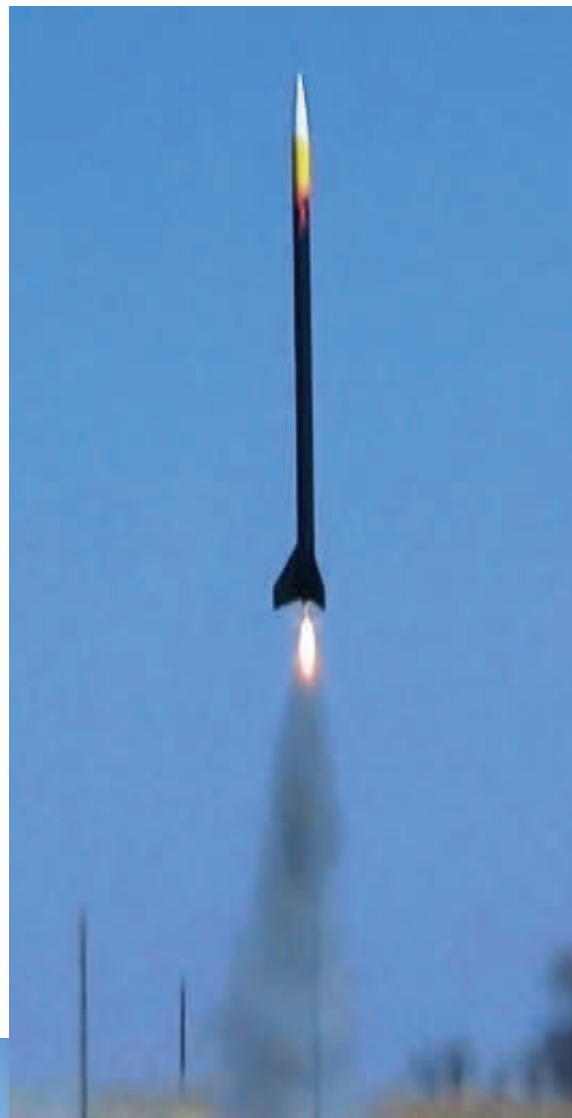
The Maxi Vector V in flight at the February DARS launch!

Out Standing in Our Field! ~Or~ Views From the February Launch



What happens when you "forget to take off the parking brake?" You get a really good shot of the ejection charge going off!*

** Jack Sprague's line*



A very nice Aerotech Mirage takes flight!

It was busy enough that Jack Sprague had to direct traffic out to the pads.





Adam Amick became an expert tracker at this launch. His daughter, Hannah, had a science fair project that involved altitude and dad stepped up to the plate!

Bob Turner showed up with his beautiful Red River Rocketry Merlin!



Jack Sprague demonstrates the latest in Eggs-stronaut suits! Very effective in cleaning up "mishaps!"



Manly men John Dyer and Chas Russell show off their rocket muscles!.....or.....something.....

How to Contribute to Shroudlines

And now for the “last page begging part” of our publication. As I have made clear in the past, without you, we have no newsletter. We all have differing interests and areas of expertise, and that is exactly what this newsletter needs!

Once again, I'd like to thank all of those who have contributed material so far. You are very much appreciated! Still, we need more! Therefore, if you have any kind of article, picture, cartoon, rambling, etc., just send it to stu29573@yahoo.com. I usually work best with Word documents, and JPEG files, but I can make just about anything work if I have to. I can also handle stuff that is written down, but that means I have to type and that can be a bit touch and go... But I'll take it anyway!

You can also give me things at the meetings (which I almost never miss...almost), and I promise to try my best not to lose them. I can return stuff at the next meeting if need be.

As I have said many times in the past, I really want this newsletter to be by the club and for the club. You guys can think up much better stuff than I can (as is evidenced by the articles we've been getting lately). So, stop just thinking about maybe writing something and actually do it! You'll be glad you did! (as will everyone who reads it!)



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| | |
|---------------------------|----------------------|
| President | Jack Sprague |
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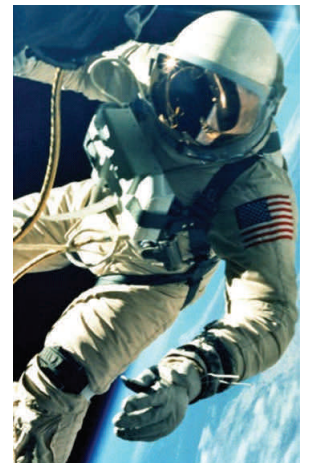
DARS

The Dallas Area Rocket Society is a non-profit chartered section of the National Association of Rocketry (“NAR”). Its purpose is to promote the hobby of consumer rocketry in the Dallas/Ft. Worth metropolitan area.

Membership in DARS is open to all interested persons. Membership in NAR is encouraged, but not required. Annual dues are \$10.00 for individuals and \$15.00 for families. The entire family, including children, are welcomed to the meetings. Go to the website and fill out and send an application to join or renew your membership.

The club normally meets on the first Saturday of each month at 1:00 p.m.

Visit the DARS website for the meeting location: www.dars.org



Stay connected! All of us will reach greater heights with your attendance at the club meetings.

Vendor Links (* DARS member discount—confirm before ordering)

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