The ZOG-43

The Newsletter of NARHAMS, NAR Section #139.
NARAM-43 National Champions, 2001

HAMSters on the Town: The Udvar-Hazy Center

By Ole Ed, Photos by Chris Kidwell

The club went to NASM's newest museum on Saturday the 28th. There were 24 people in the NARHAMS party if memory serves—although I am a bit hazy on the Hazy Center.

Let's see, there were in order of appearance: Chris Kidwell and Jim Miers, then Jennifer and Ward. Ed and Alan makes six (if you count the others). Then DJ from the GSFC VIC with DJ's friend Sally made eight. Four Bittles made 12. Then Richard Hickok was unlucky 13. Four Has made it 17 and then Ivan G. from NOVAAR was there. Then Alistar with sis and parents makes it 22. Then Doug Pratt and daughter makes it 24.

We had two tour guides who volunteered and were knowledgeable and took us in two groups on two hour tours of the seven eras of aviation which when you enumerated only came out to six: Pre-WWI, WWI, the golden age of flight/barnstorming between WWI and WWII, WWII, the Modern Era, and the Space Era.

The place is nice and big...two maybe three exisiting NASMs could fit inside. They only have 1/3 of the exhibits there and it is a jumble right now. The use of three levels (catwalks) to view the displays is a masterful trompe d'oiel. You see, there is only one museum floor for displays, so the curators had to either put airplanes on the floor, suspend them from the ceiling or put the artifacts on the walls. Still I didn't mind the jumble except for placing a P-38 under the Enola Gay. What's wrong with this, is that the twin booms of the P-38, one of the most distinctive looking and readily identifiable aircraft of WWII is tucked under the bomber and away from sight.

I liked how the display barriers were

made and signs were placed. It reaffirmed some things done at GSFC's VIC when we had some 20-plus spacecraft on display there many years ago, i.e., keep barriers low and wide at the bottom so that the restraints preserve the physical security of the artifact and yet do not obscure the view for anyone taller than 3 feet.

The lack of sign-age on the Enola Gay didn't bother me particularly. The sign there had as much data on it as any other aircraft on display. I kinda think all museums have the same problem: You've got the display which has a deep or rich history and a very terse sign that doesn't do justice to the social, technological, cultural or historical impacts that the artifact has contributed (or added to in infamy). I'd love to be with a group of museum curators to discuss this topic. I think a reference area associated with each galley in a musem could do a lot to address this and PCs—either stand alone or networked could contribute.

You don't have to go through a metal detector, although bags are checked to get into the place. The space age wing, the restoration area from Silver Hill, and a food court have yet to be finished. You can get box lunches from a Subway franchise there. You can apparently walk around with the food, and have plenty of opportunity to drop things on the aircraft from the catwalks too. Someday some protestor will do this or a kid will drop his sandwich onto something. An

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Vol 26 Issue 3

Inside this issue:

ZOG-43

Volume 26 Number 3

March 2004

ZOG-43 is the official newsletter of NARHAMS the National Association of Rocketry Headquarters Astro Modeling Section # 139

NARHAMS is the oldest model rocket club in the United States!

ZOG- 43 is dedicated to model rocketeers of all ages, abilities, and interest. We are committed to providing the most current, up-to-date information on model and real world rocketry, and to provide educational material as well as entertaining information. ZOG -43 is published monthly and is available to anyone on a subscription basis. Current rates are $10 for meeting pickup or email or $15 for postal mail U.S. Funds for 12 issues a year, payable to NARHAMS

For more information.....

If you have any questions about ZOG-43 or NARHAMS, or if you have any comment(s), correspondence, free merchandise or if you'd like to submit an article, send them to :

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ZOG-43 is edited by Kevin Johnson, and is a seven-time winner of the NAR/LAC "Rockwell" Trophy, recognized as the best NAR section newsletter.

Years won: 1969, 1973, 1975, 1990, 1991, 1992, & 2003

Zog-43 staff typist is none other than Jennifer Ash-Poole a.k.a. Secretary to the Stars !

Photographs: by Kevin Johnson, except where noted.

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NARHAMS ON THE WEB

http://www.narhams.org

Send and receive E-mail with other NARHAMS members through NARHAMS Web page grouplist via yahoo-groups.

NARHAMS serves Baltimore, the state of Md., Washington DC and the surrounding Metropolitan areas. The club is a section of the National Association of Model Rocketry (NAR) and we are the oldest continuously active model rocket club in the United States, first established as a high school club in 1963, changing our name to NARHAMS when chartered as a NAR section in 1965. NARHAMS is the only four time winner of the NAR "Section of the Year" award.

Years won: 1997,1998,1999, 2001

NARHAMS members regularly fly their model rockets at NASA's Goddard Space Flight Center on Soil Conservation Rd. in Greenbelt Md. The launches are open to the public and are held the first Sunday of every month (weather permitting), starting at 1 PM.

Sport Launches are usually held the second Saturday of every month at Middletown Recreation Park in Middletown Md. Check the web page for updates.

NARHAMS welcomes all prospective new members to our monthly meetings. They are held on the first Friday of the month from 7:30 to 9:30 PM at the College Park Airport Annex Building. Dues are 10 cents a week, with an initial 50 cents up front (good for 5 weeks) as a sign of good faith.

NEW: Monthly meetings available on-line via chat-room , simply go to the NARHAMS homepage and click on the link.

ZOG ROYAL COURT

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Directions to College Park Airport:

Follow I-495 to Kenilworth Ave. South. Make a right onto Paint Branch Parkway, then make a right on Cpl. Frank S. Scott Dr. At the airport entrance go straight to the Operations Building, the annex building is adjacent to the "Ops" building.

March's From the President

March is really the beginning of our flying season, both competition and sport. The weather gets a little better (and warmer!), the sun is staying up longer so we feel we have more time to fly. We get to show off some of our hard work in the winter building session (You were building during the cold months, weren't you?) We have several good launches coming up, and I want to encourage everyone to come out and fly some rockets.

When we had the planning meeting back in October, we tried to plan the section meet to be a way to introduce people to competition, and make it a bit fun for the old timers. This year, we will have the NARHAMS cadets with their Super-6 kits and Longfellows. If you want to try out competition, section meets are the way to go, and this year, it is a few simple events. Heck, everyone can enter Random Duration with their favorite sport model.

Take a look at the events, and pick a few you want to try. The section meet is free to enter, so you don't have an excuse (unless you have flown all your B engines from your bulk pack.). If you have a Super-6 type model, you can try out competition at the section meet in a few weeks. And don't worry about the old timers beating you. We have to fly the Super-6 kits too. (Sometimes the competitioners forget how to build a sport model kit.) See you out at the range!

Zog Bubbles

Udvar-Hazy tour...

infant has already dropped a pacifier on the blackbird.

The $12 parking fee is suspended after 4 pm and the center is open until 5:30 pm daily. They get about 2,000 visitors there daily on weekdays and 10,000 on weekends I was told. I don't know if that is 10K for each weekend day or combined.

Hazy has an observation tower which is nice and many of us went up there after the tour to look out over the parking lot and surrounding scenery. There is also an IMAX theatre which shows films daily up to 8 pm...so one can get inside after the normal areas to visit are closed. Our film on Saturday was of NASCAR racing—apparently the lost seventh era of aeronautics.

The place was inspiring. I remembered flying on a couple of the aircraft they had represented there—a Huey helicopter (Vietnam era transport) and a 707 (trip to the first WSMC). Most I had seen before in different contexts—like standing at GSFC when the Enterprise came over the Washington area above a 747, watching the Concorde streak by every Sunday at GSFC, seeing the SR71 parked next to the terminal at Dulles some 14 years back, taking people on tours at Silver Hill or seeing the aircraft once displayed at NASM.

Afterwards several of us went and ate at a local restaurant and talked together for a few more hours.

The club did well by having this event. Many agreed we should do this tour every second year in the future. Thanks goes to Jennifer for arranging the guides, and to Chris and Doug for using their houses as gathering points for carpooling.

New Members Join the Ranks

Club Treasurer Ole Ed reports that we have had a spate of new members this month. Please welcome Chad Blair, Roy Lappalainen, Kayvon Mirdamadi, Andrew Cochetti, Emmett Cochetti, Connor Sesso, Steve Mitchell and Hartley Saunders II.

We also welcome back Scott Branche and Mike Mehalick who have paid their dues again.

We hope to see you at a club launch or activity soon!

Vince Pearman sent this photo (along with the one on page 2) of his Vostok. It's really a beauty! Photo by Vince Pearman.

Making Centering Rings by Arc-Scribing

Often when building a model, you have a need for a centering ring that you don't have on hand, can't get quickly, or just simply isn't available for the tube combination you want. The method described here allows making custom rings that are consistent once the correct radius has been determined for the arc-scribe tool.

The scribing tool is essentially a crude custom beam-compass for each desired inside or outside tube diameter. A piece of spruce 1/4" tall and 1/2" wide is suitable for the beam. The pivot point is a pin such as a map pin or round-headed pin (as used to put notes on a cork board), about 1/32" diameter, protruding about 1/4" from the bottom of the spruce beam.

The scribing pin needs to be located at just the right distance away from the pivot pin to produce the desired tube radius. Whatever the tube's inside or outside diameter is, divide by two and that is the distance you need. However, the exact fit is rarely obtained on the first try, test first by scribing out (explained later) the desired ring or hole in some scrap material then compared to the tube. Relocate the scribing pin hole as needed until the test scribes produce a ring or hole with a good fit. Once the right location for the hole is confirmed, use Cyanoacrylate (CA) to help secure the pins into the spruce so they can't work loose. It can help to use some rough sandpaper or a file on the body portion of the pins to give the CA a good surface to bond to. The scribing pin's point should protrude from the spruce beam bottom by about 1/16".

For each scribing tool you make, write on it what tube it is for, and whether inside or outside. If you know you'll make a lot of rings of one type, make up tools that will scribe both circles for the ring at the same time. So instead of using one tool to scribe a circle for the inside of a 1.64" diameter tube and then use another tool to scribe the outside of an 18mm tube, you can scribe both at the same time.

This method works great on plastic sheet and plywood up to 1/16" thick, in a pinch it can do thicker plywood, but there is an alternative for thicker rings which will be covered later. For most model rockets, 1/32" plywood is fine for rings. Since this method works best of all with plastic, it is preferable to make rings out of plastic such as .04" sheet for uses where plastic is acceptable. Obviously plastic is NOT acceptable for a top centering ring of an engine mount, as it would be subject to melting from ejection heat, for other uses such as centering rings for a nose section's paper shroud it's fine.

After deciding which material to use for the ring, make a pinhole into the material that is greater than the large radius of the ring you are making (A 1/32" drill bit is preferable for making the pinhole). Put the scribing tool's pivot pin into the hole. Press down onto the scribing tool while rotating it, to scribe circles into the material. Rotate enough times with adequate force to scribe almost halfway through. Then, flip the material over and scribe the other side about halfway through. You can decide whether or not to scribe even more to break through to the other side or to simply flex the material back and forth to cause the plastic or plywood to fatigue enough to pop free.

If you use a scribing tool that cuts both the inner and outer radiuses at the same time, always apply a bit more pressure to the outer radius area so that whenever the ring pops free it will be the outside, and not the inside hole. If the inside hole pops free first, you won't be able to easily use the scribing tool to scribe the rest of the outer portion of the ring.

That is essentially all there is to making rings by scribing. Now that you know how to make basic rings, there are some other tricks you can do. As referred to before, this method cannot make thick rings. Not one single thick ring. But, if you want a 1/8" plywood ring, you can make two 1/16" plywood rings and glue them together (crossgrain) to make one strong 1/8" ring.

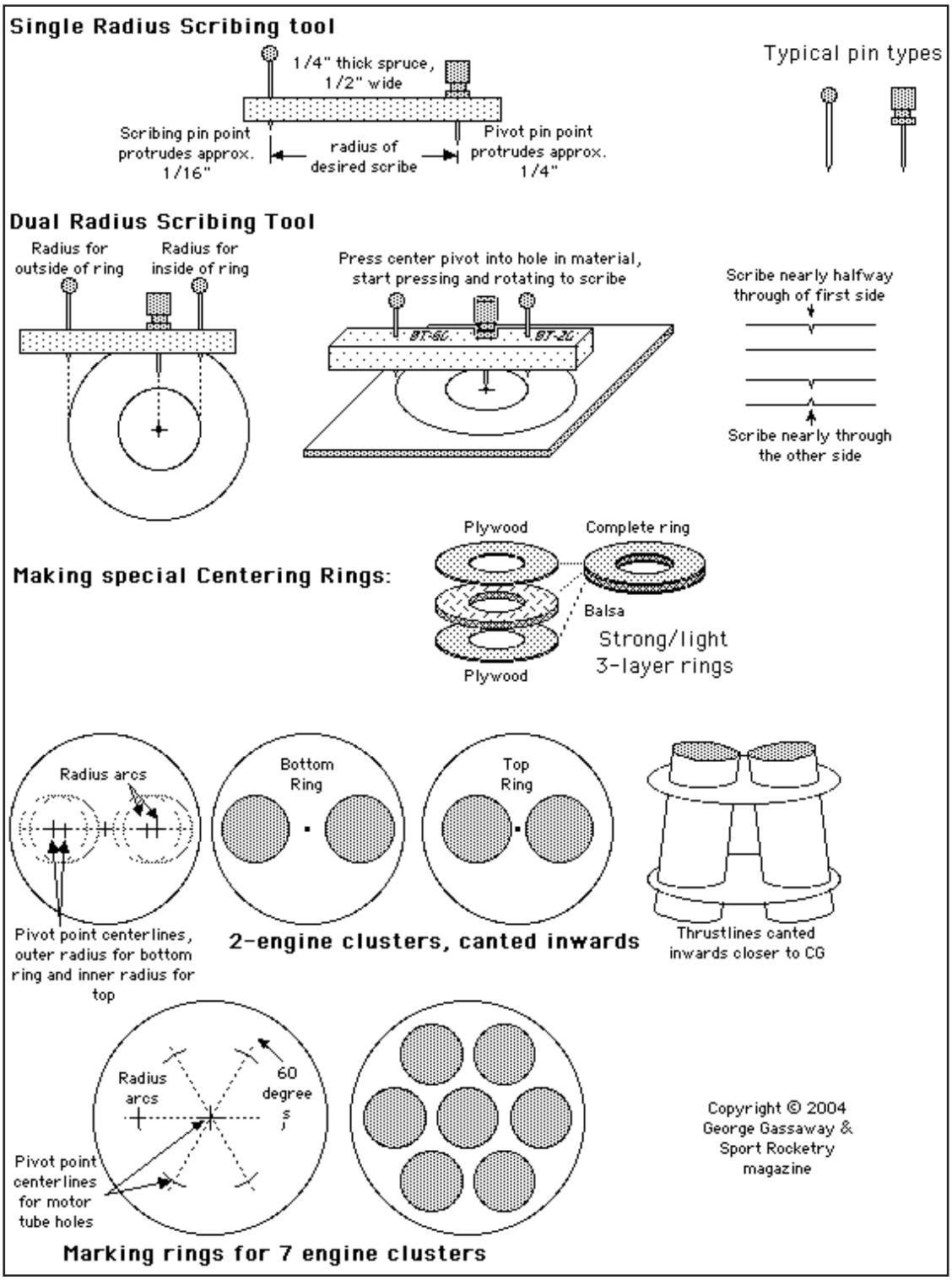
The multiple ring method also can be used for making stiff rings that are strong but also light. Make up two plywood rings of whatever thickness would be suitable, then make a thick balsa ring - using one of the plywood rings as a guide for cutting out with a model knife. Glue all three together to create one very thick, stiff, strong, yet relatively light ring.

This method also is practical for cutting rings with multiple holes as used for clustered models. You first scribe out just the outer portion of the desired ring. Draw a straight line across the ring, running through the center pinhole, as a reference line for a 2-engine cluster. Using a compass pivoting in the center pin hole, make short arcs to mark the center location for the cluster tube holes to be scribed from, then make pin holes in those arcs to define the pivot points for the tube holes to be scribed out.

Also shown in the 2-engine example is how to mark off two different pairs of pivot point locations so that a bottom centering ring could have the tube holes farther out than the holes in the top ring. Why do this? The result of that would be to cant the en-

gine mount tubes inwards, so their thrust lines come closer to the center of gravity of a clustered model, so it is less affected by uneven ignition of the cluster. The example shown for 2 engines works for any cluster combination, as long as there is room in the model's main body to space the engine tubes that way.

For more than 2-engine clusters, mark off more reference lines from the center of the main ring, spacing all the lines the same angle apart (# of outer holes / 360). For example a 7 engine cluster with 6 outer engine tubes, make the lines 60 degrees apart from the center. Determine the radius location for the center pivot point of the outer tubes, mark off the radial arcs, then put 1/32" pinholes into each location. You may want to do the above with a plastic ring instead of plywood, and save the plastic ring to use as a template - that way you don't have to mark off every complex ring you want to make, just use the the plastic ring as a guide to transfer the pivot pinholes to the material you plan to cut the real rings from.



George recently posted this article to several of the rocketry email groups. I'm reprinting here for those without access to the groups. - Kevin

April 2004 Astro-bulletin

By Vince Pearman, NAR 75394

Moon Phases - April 2004 Full Moon: April 5 Last Quarter: April 12 New Moon: April 19 First Quarter: April 27

Planets For April

VENUS- Venus shines brightly in the western evening sky all month, and on the evenings of April 2nd and 3rd, will join up with the Pleiades (or "seven sisters"), for a beautiful pairing. As Venus begins to swing around between earth and the sun this month, look for it to become a beautiful crescent shape, visible even in a low power telescope. This year Venus will appear higher in the evening sky than it has in many years, staying up for 4 hours after sunset at the beginning of the month. It won't appear this high in the evening sky for another eight years.

MARS- Mars has now faded greatly since last summer's close approach, but is still visible as a subdued orange object in the western evening sky.

SATURN- Saturn appears prominently in the west after sunset this month (see picture on page 8).

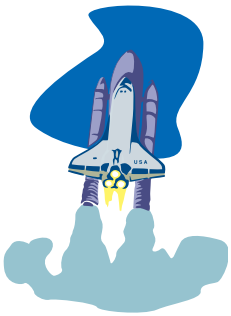
JUPITER - Jupiter shines brightly overhead after sunset this month, the third- brightest object in the sky, after the Moon and Venus.

Spring Clusters

Now that warmer weather is here, why not enjoy a few moments hunting down some open clusters in your binoculars? Open clusters are loosely packed star clusters, the most famous example being the Pleiades in Taurus. With the naked eye, most people can count 6 or 7 stars in the Pleiades. With a simple pair of binoculars, several dozen stars are visible, and in a small telescope several hundred stars can be seen under a dark sky. The Pleiades are an easy target, appearing in the western sky after sunset this month, and pairing up with Venus on the nights of April 2nd-3rd.

Another less famous open cluster in Cancer is M44, more commonly known as the "Beehive", or in older times, "Praesepe", the Greek word for "manger". The Beehive appears as a fuzzy patch of light to the naked eye under dark skies, and is an easy find in binoculars even in moderately light-polluted skies. To find the Beehive this month, locate Castor and Pollux (the 'twin' stars of Gemini) in the southwest, then follow an imaginary line three steps to the west, and two steps north (using the distance between Castor and Pollux as one 'step'). Sweep this region using binoculars and you should find the Beehive easily.

The constellation Auriga, the pentagon-shaped asterism appearing in the western evening sky this month, is home to three nice open clusters; M36, M37, and M38. Just outside the southern side of the pentagon, lies M37. Just within this side lies M36, and just a bit to its north lies M38. These clusters are nearly close enough to see all three objects in the same field of view in a pair of low-power binoculars.



Space Trivia

By Jennifer Ash-Poole,NAR 61415

Since we went to the Udvar-Hazy museum, I thought some aeronautics questions would be good. (Note, if you went on the tour, some of these were talked about.)

1. Who was the first successful glider pilot?
2. In what war were jets first used?
3. What was the last plane Orville Wright flew?
4. True or False. The Lockheed SR-71 Blackbird flies at speeds faster than a bullet travels.

Answers:

1.Otto Lilienthal
2.WW II
3.Lockheed Constellation, on it's maiden flight in 1944
4.True

Come Fly with Us

By Tom Ha, NAR 76754

Please highlight the date of May 8th, 2004 on your calendars. The newest "kid" (NAR section) on the block extends a special invitation to NARHAMS members to join us, the Central Pennsylvania Rocketeers, at their flying field in Pennsylvania for a joint sport launch from 10AM to 4PM on May 8. This is the same field RAMTEC-11 will be flown at, so come check it out prior to the competition!

The field is big and open, the toilets are flush, and we're not limited to one area to fly from. The nearest tree line is a quarter-mile away and we will be trying for a waiver of 5,000' for this launch only. There's even 4,000 square feet of pavilion to shelter your stuff.

Special activities at the launch will include hourly door prize drawings and free cold drinks (soda and bottled water) for all attendees. More information with directions and details will follow. The members of C.P.R. hope to see you there!

John McCoy has been building this tiny launch scene from the old Der Red Max instructions. Photo by John McCoy.

Calendar of Events for 2004

Mar 5- Monthly meeting, Pratt Hobbies building session
Mar 6- Cadet building session College Park Aviation Museum 10 am -Noon
Mar 7-Public launch, Goddard Space Flight Center
Mar 13- Sport Launch, KATE-2 section meet
Mar 27- Sport Launch, no theme
Apr 2- Monthly meeting, 1/4A Flexie building session
Apr 3- Cadet building session, College Park Aviation Museum 10am-noon
Apr 4- Public launch, Goddard Space Flight Center
Apr 10- Sport Launch, OPOSSUM-8 open meet
Apr 25- Rockville Consortium of Sciences building session and launch
Apr 30-Monthly meeting, Old Timers Reunion
May 2- Public launch, Goddard Space Flight Center
May 8- Sport launch with C.P.R., Newville, PA
May 15- TARC Fly-offs, Great Meadows, VA
Jun 5-6- Sport launch and ECRM-31 regional meet
Jun 5- Monthly meeting Hobbytown USA, Frederick 7:30-9:00 pm
Jun 6- Public launch, Goddard Space Flight Center
Jun 26-27- RAMTEC-11 regional meet, Newville, PA
Jul 2- Monthly meeting, Mold-making/casting discussion
Jul 4- Public launch, Goddard Space Flight Center
Jul 10- Sport launch, US scale models theme
Jul 18- Goddard Contest, Goddard Space Flight Center
Jul 30- August Meeting
Jul 31-Aug 6- NARAM-46 national meet, Great Meadows, VA

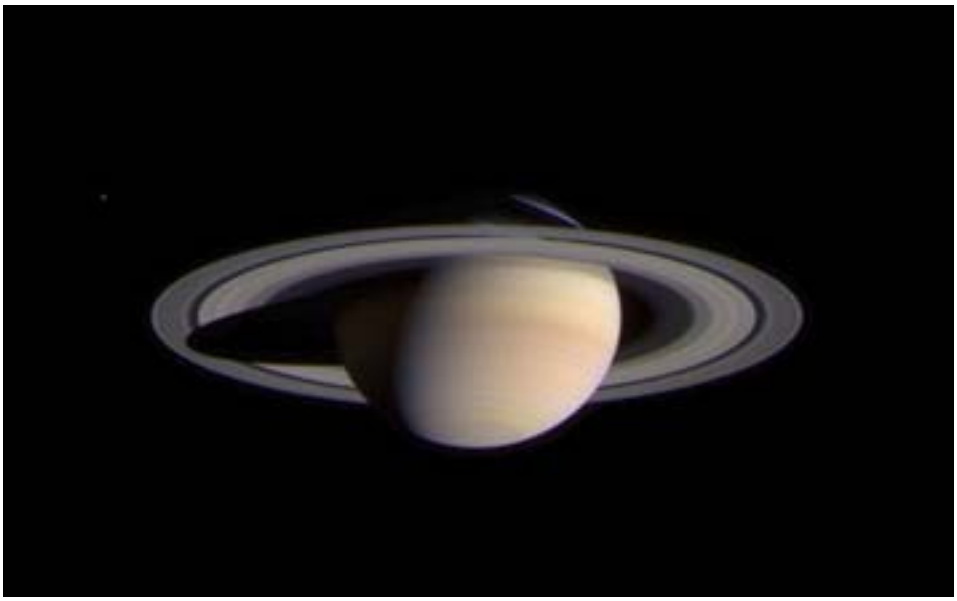
Sport launches are held at Middletown Park from 10am-4pm, waiver up to 3.3 lbs and "G" motors not exceeding 62.5 grams of propellant. All flights "E" power and above are restricted to 5 degrees from vertical and between the hours of noon and four PM. Call ahead to confirm launch and waiver availability.

Business meetings are held at the College Park Airport Annex Building, **except where noted above**. Meetings begin at 7:15pm with building sessions or presentations and last until 9:00pm or so. Regular Business meetings follow until 10:00pm. If no presentation or building session is scheduled, please bring whatever project you are working on currently.

Questions? Call Club President Jennifer Ash-Poole at 410-674-6262 or visit NARHAMS online at http://www.narhams.org

Cassini Captures Stunning View of Saturn

NASA Press Release 2/27/04



Four months before its scheduled arrival at Saturn, the Cassini-Huygens spacecraft sent its best color postcard back to Earth of the ringed world. The spacecraft is expected to send weekly postcards, as it gets closer to the ringed giant.

The view from Cassini shows Saturn growing larger and more defined as the spacecraft nears a July 1, 2004, arrival date. On February 9, Cassini's narrow angle camera, one of two cameras onboard the spacecraft, took a series of exposures through different filters, which were combined to form the color image released today.

"We very much want everyone to enjoy Cassini's tour of this magnificent planetary system," said Dr. Carolyn Porco, leader of the Cassini imaging science team at the Space Science Institute in Boulder, Colo. "And I can say right now the views out the window will be stunning," Porco said.

Cassini was 69.4 million kilometers (43.2 million miles) from Saturn when the images were taken. The smallest features visible in the image are approximately 540 kilometers (336 miles) across. Finer details in the rings and atmosphere than previously seen are beginning to emerge and will grow in sharpness and clarity over the coming months. The thickness of the middle B ring of Saturn, and the comparative translucence of the outer A ring, when seen against the planet, as well as subtle color differences in the finely banded Saturn atmosphere, are more apparent.

"I feel like a kid on a road trip at the beginning of our tour," said Dr. Dennis Matson, project scientist for the Cassini-Huygens mission to Saturn and its largest moon Titan. "We've been driving this car for nearly 3.5 billion kilometers (2.2 billion miles) and it's time to get off and explore this ringed world and its many moons. I can hardly wait, but in the meantime, these weekly color images offer a glimpse of our final destination," Matson said.

In the coming months, imaging highlights will include near daily, multi-wavelength imaging of Saturn and its rings; imaging of Titan beginning in April; Titan movie sequences starting in late May, when the resolution exceeds that obtainable from Earth; and a flyby of Saturn's distant moon, Phoebe, in June, at a spacecraft altitude of 2,000 kilometers (1,243 miles).

Through Cassini, about 260 scientists from 17 countries hope to gain a better understanding of Saturn, its famous rings, its magnetosphere, Titan, and its other icy moons. "Cassini is probably the most ambitious exploration mission ever launched and is the fruit of an active international collaboration," said Dr. Andre Brahic, imaging team member and professor at Universite Paris 7-Denis Diderot, France. "It should be the prelude of our future, the exploration of our surroundings by humanity," Brahic said.

Cassini will begin a four-year prime mission in orbit around Saturn when it arrives July 1. It will release its piggybacked Huygens probe about six months later for descent through Titan's thick atmosphere. The probe could impact in what may be a liquid methane ocean.

JPL, a division of the California Institute of Technology in Pasadena, manages the mission for NASA's Office of Space Science, Washington. The Space Science Institute is a non-profit organization of scientists and educators engaged in research in astrophysics, planetary science, Earth sciences, and in integrating research with education and public outreach. Cassini-Huygens is a cooperative mission of NASA, the European Space Agency and the Italian Space Agency For the first image and other weekly images on the Internet each Friday, visit: http://www.nasa.gov http://ciclops.org

For information about Cassini-Huygens on the Internet, visit, http://saturn.jpl.nasa.gov

NASA's Space Place

Deep Space Network 2-for-1 Sale!

By Patrick L. Barry

Call it a "buy one, get one free" sale for astronomers: Build a network of radio dishes for communicating with solar-system probes, get a world-class radio telescope with a resolution nearly as good as a telescope the size of Earth!

That's the incidental bonus that NASA's Deep Space Network (DSN) offers the astronomy community. Designed to maintain contact with distant spacecraft in spite of the Earth's rotation, the large, widely spaced dishes of the DSN are ideal for performing a form of radio astronomy called "very long baseline interferometry" (VLBI).

VLBI produces very high resolution images of the cosmos by combining the output from two or more telescopes. The result is like having a giant "virtual" telescope as large as the distance between the real dishes! Since bigger telescopes can produce higher resolution images than smaller ones, astronomers need to use dishes that are as far apart as possible.

That need dovetails nicely with the DSN's design. To maintain continuous contact with deep space missions, the DSN has tracking stations placed in California, Spain, and Australia. These locations are roughly equally spaced around the Earth, each about 120 degrees of longitude from the others-that way at least one dish can always communicate with a probe regardless of Earth's rotation. That also means, though, that the straight-line distance between any two of the stations is roughly 85 percent of Earth's diameter-or about 6,700 miles. That's almost as far apart as land-based telescopes can be.

"We often collaborate with other VLBI groups around the world, combining our dishes with theirs to produce even better images," says Michael J. Klein, manager of the DSN Science Office at NASA's Jet Propulsion Laboratory. "Since our 70-meter dish in Canberra, Australia, is the largest dish in the southern hemisphere, adding that dish in particular makes a huge difference in the quality of a VLBI observation."

Even though only about 1 percent of the DSN's schedule is typically spared from probe-tracking duty and scheduled for radio astronomy, it manages to make some important contributions to radio astronomy. For example, the DSN is currently helping image the expanding remnant of supernova 1987A, and Dr. Lincoln Greenhill of the Smithsonian Astrophysical Observatory is using the DSN dishes to explore a new way to measure the distances and velocities of galaxies.

And all this comes as a "bonus" from the dishes of the DSN.

To introduce kids to multi-wavelength astronomy, NASA's website for kids, The Space Place, has just added the interactive demo, "Cosmic Colors," at spaceplace.nasa.gov/cosmic .

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Bull Puppies, Bull Pups & Bull Dogs I Have Known

By Paul Miller, NAR 51615

To preface the following, I must admit to my limited knowledge of all aspects of these critters. Let's consider Bullpups. Did you watch the Westminster Kennel Club Dog Show last month? Well, Bulldogs are a big deal with the A.K.C. crowd , Little Buddy! Check the Washington Post or Baltimore Sun, these puppies aren't cheap. You are looking at $I,000 to $2,000 for a dawg that can't hit a newspaper when Nature calls. They are cute and and with lotsa' luck they can jump a little over three feet.

For less than a hundred bucks you can get a Bullpup that can punch the clouds with 3,500 foot leaps and you can skip the newspaper. PML, a.k.a. Public Missiles Limited, can provide 2.1, 3.1, and 6.0" diameter sport scale Bullpups for enthusiastic rocketeers. I have witnessed larger semi-scale Bullpups that were carried to a launch pad and have flown with success via HPR craftsmen. (Oops, make that craftspersons.)

I'm positive that I have never seen a scale Bullpup. Checking Peter Alway's Bullpup plans, there are numerous items that won't measure up on models I have known. I called John McCoy, who probably has a MicroMaxx Bullpup, and he claims there are no scale 'Pups to be seen. John did mention some nice 'Pup pix in Bill Gunston's Modern Airborne Missiles (IBSN 0-668-05822-6) He professes that his mini 'Pup may look like the blue and white AGM-12B on page 92 when finished.

My personal history of Bullpup model rocketry begins with a trip to the Stoneleigh Hobby Shop on York Road in Baltimore. Lowell Sakers was checking my new Marklin HO steam engine on a test track. Above me were rocket kits hanging on strings across the ceiling. Lowell handed me the new 1987 Estes catalog. I took the new Bullpup AGM-12C kit home too. I still have the catalog, but a short time later, Andrew and I lost the Bullpup in the pine trees to the left beyond the GSFC Visitor Center launch area. We still have two Estes Bullpups, one is on the shelf built in the early 90's, and one is in the bag.

Chuck Barndt, the Launch Pad guy, gave us a Bullpup AGM-12B. We flew it on a "mighty D" at a Battle Park, Culpepper Launch in 1994. According to our notes, it headed straight into those rocket grabbin' trees to the left. In 1996, Terry Chalfant and Dave Lucas. fellow MD Tripoli dudes, brought a 5.6" diameter fiberglass Bullpup to the library in Columbia. I was stunned, this stubby rocket was bold and beautiful. When I received the Dynacom catalog from Boston, PA, my brain passed on the Bullpup and seized on the V-2. Go figure, my fissures were fixed on der Vergeltungswaffe-2 that long ago.

Enter the PML folks. I have just completed the construction of my tenth PML kit, the 3.1" diameter Bullpuppy with a 38 mm motor mount. Like all previous rockets from this outfit, it was fun to build and pleasant to the eyes. These people know how to bag a rocket kit with everything you need. The instructions are clear-cut with tips to insure the builder's success. The quality parts are easy to assemble and the finished model flies well. Two years ago, I built the PML 2.1" Bullpup that accepts 29 mm hardware and F and G motors. When I saw Don Brown's 3.1" Bullpuppy last year, I knew I had to get one too.

Ken Allen, the Performance Hobby guy, was holding court at a cold and muddy Price launch last fall. The PML kits were laid out on a plastic tarp. I traded $65 for a Bullpuppy, which reached my rocket construction center (the basement) later that day. After consulting Don, King Zog Emeritus and Bullpuppy builder, I had the scoop to make a super AGM-12D. Go to www.publicmissiles.com "The PML knowledge base and webstore."

The kit yields all you need sans sandpaper, making tape, epoxy, paint and motor. The PML people present 9 steps

Paul's Bullpup collection. Photo by Paul Miller.

that take the model to the launch pad. Step one involves the piston strap and motor mount tube. I used 5, 15 and 20 minute epoxy throughout the construction process. All parts to be bonded were scuffed with medium grit sandpaper. Step two placed the motor mount securely in the boattail. Steps 3 and 4 detailed the placement of the G-10 fins in the boat tail with generous

The real Bullpup family. The AGM-12D is 2nd from the bottom. Photo from www.designation-systems.net.

amounts of epoxy including fillets inside and out to provide ultimate strength. Step 5 attaches the fore fins

to the main airframe, a 43 cm length of Quantum Tube. In Step 6 the boat tail is glued and aligned to the airframe. The 6' brass launch lug is attached 3 inches above the bottom of the airframe.

Step 7 describes the construction of the PML "Piston Ejection System." An instruction sheet claims "A piston ejection system is the most effective and reliable means of parachute deployment. Using our piston ejection system greatly reduces the risk of partial ejection and burnt parachutes." They further state that improper amounts of ejection charge (usually too much) can cause recovery system failure. A chart is provided citing the proper amount of ejection powder used with various diameter rockets using their system, and a piston travel of under 30". I have successfully flown and recovered 6 different PML models with piston ejection. My pistons are assembled and fitted with care to ensure smooth and even movement within the airframe. The system is thoroughly cleaned after each flight.

Step 8 requires the attachment of the parachute, piston and nose cone to the shock cord. It is a 12 foot length of 5/8 inch tubular nylon. The nylon parachute is 34 inches in diameter with a 6 inch dip and yields 6 shroud lines when attached to a "kwik-link." PML provides an extra sheet "Tying Tubular Nylon" to facilitate the correct procedure.

The final step presents the sequence to follow when packing the airframe for flight. Although the instructions end, there is still plenty to do. The determination of the CP and CG, the addition of nose weight, the painting of the exterior, and the application of the decals still face the modeler. In a box on the front of the instructions it states: "The center of pressure (CP) of this rocket is 28" from nose to tip"". They used RockSim 4.0 for this determination. I placed a 38 mm Rocketflight Silver Streak G 220 in the Puppy's motor mount. I packed the airframe as instructed and put on the nose cone. I added sand to a plastic bag and placed it on the nose cone until I had a CG 3.5 inches above the CP mark. The mass of the bag and sand was 320 grams. The CG is .4 inch more than the body diameter.

I drilled a 1/8 inch bit through the nose cone about 3 inches below the tip. I passed a bamboo chop stick through the holes until it was tight. With an Exacto saw I removed most of the protruding bamboo from each side of the nose cone. I put the nose cone in a Ma² (a big beer stein) from Munich and added 320 grams of 20 minute epoxy and lead shot. Twenty-four hours later I sanded away the bamboo nibs on the nose cone. I permanently marked the CG and CP on the body tube. I used 220 grit sandpaper on the entire exterior of the model, especially the fillets on the fins and launch lug. Over several days I heated the garage to 65 degrees F, painting the Puppy with two Krylon white primer coats and one Krylon white gloss coat.

When warm spring days arrive, I will add another coat of white gloss. Finally, I will use the decal placement sheet to apply the supplied "Military Decals." I will use MonoCoat to make the three orange and two silver stripes "to be provided by the user." On a warmer day, Don and I plan to take our Bullpuppies to the Shore and stage a drag race. My Puppy weighs 40 ounces or 2.5 pounds. It stands 39 inches or one meter tall. It will be an U.S. Air Force Bullpup AGM-12D sport scale model rocket. I like it a lot. A rocket is never complete until you fly it.

A Bullpup launches from the wing of an F-100.

A 4 inch model from SkunkWorks takes off.

Get Ready for Flexies!

April's building session will focus on building flex-wing gliders for the upcoming OPOSSUM open meet. If you haven't built one of these exciting gliders before, or maybe you flew away your last one, make sure to come to the meeting on April 2nd.

Jennifer Ash-Poole will be leading the session, and she will have a list of materials available on the NARHAMS email list.

ZOG - FORTY THREE
5269 Rivendell Lane, Apt 5
COLUMBIA, MARYLAND 21044

Launch Schedule

PUBLIC LAUNCH
Goddard Space Flight Center
Visitor's Center
1:00PM-2:00PM

March 7th

SPORT LAUNCH
KATE-2 Section Meet
Middletown Park
10:00AM-4:00PM

March 13th

SPORT LAUNCH
No Theme
Middletown Park
10:00AM-4:00PM

March 27th

Next Issue's submission deadline is March 29!

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NARHAMS Model Rocket Club Newsletter