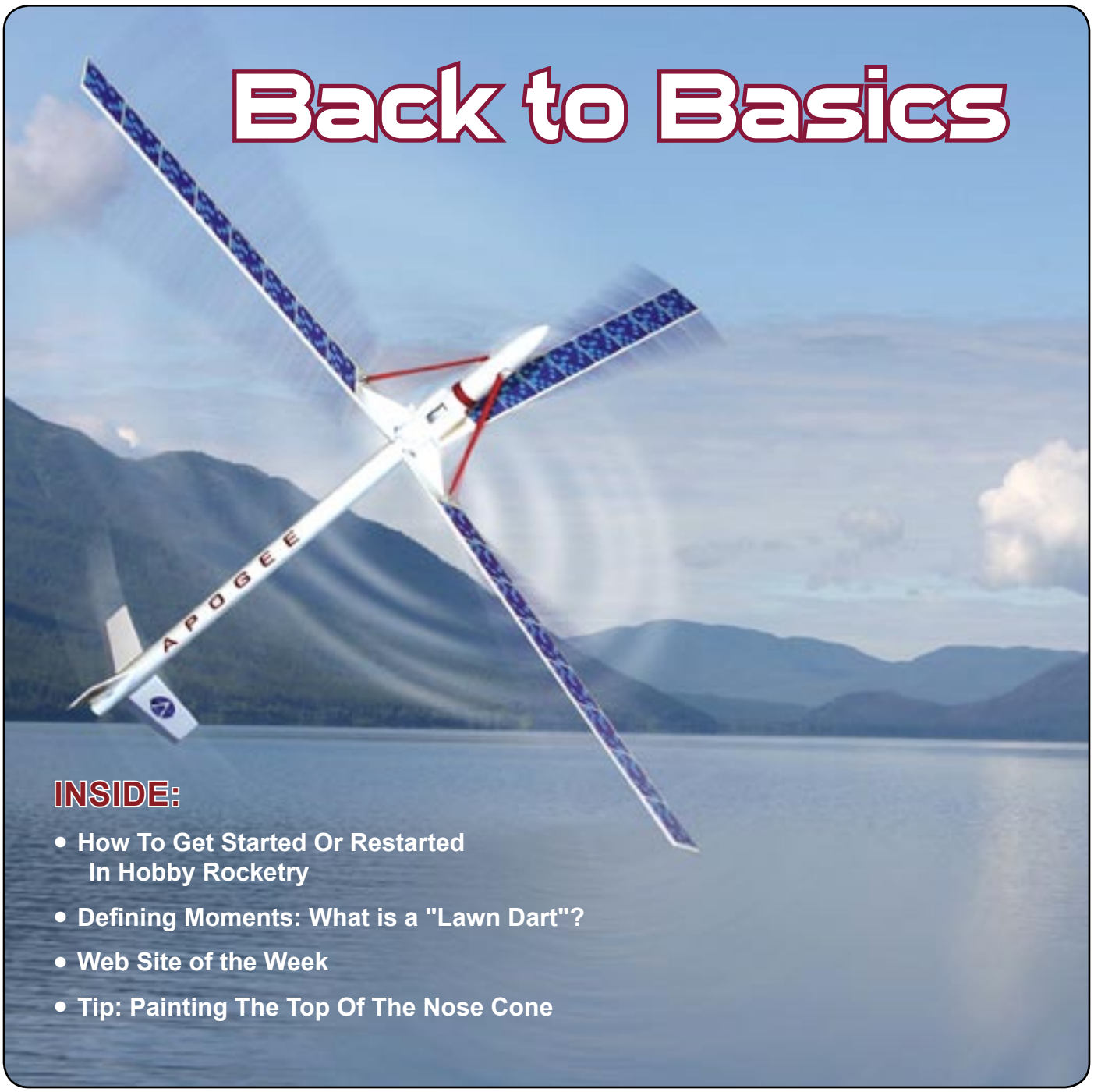
ISSUE 175 - JANUARY 16, 2007

APOGEE PEAK OF FLIGHT NEWSLETTER



Back to Basics

INSIDE:

- How To Get Started Or Restarted In Hobby Rocketry
- Defining Moments: What is a "Lawn Dart"?
- Web Site of the Week
- Tip: Painting The Top Of The Nose Cone

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Back to Basics

by John Manfredo

How to get started or restarted in hobby rocketry

Here's your story; you've either been out of the hobby for a long time or you are just discovering it for the first time. Don't worry though, as this article will make more sense out of all the information you've been bombarded with and find answers for unanswered questions

Starting Off

If you are a novice that has either never flown rockets before, or can't remember that far back in your childhood, then a starter set or ready-to-fly rocket is the way to go. For example, the *Quest Millenium Series Starter Set* (http://www.apogeerockets.com/starter_sets.asp) has all you need to get started (see picture 1). This comes with a pre-assembled rocket, launch pad, launch controller, and 3 rocket motors! It will get you up and flying in no time. Or you can try the *First Time Flyer Package* (http://www.apogeerockets.com/first-time-flyer.asp). This includes the above-mentioned kit, but also includes the *Building Skill Level 1 Rockets* CD ROM Quicktime® video book. Let Mr. Rocket be your expert teacher to guide you through the process of building your first rockets the right way. Tim wishes he could be right there next to you as you build the rocket, and in a way, he can be. This CD ROM is a series of short videos that will walk you through the steps in building and launching your first rocket. You simply watch and listen as Mr. Rocket teaches you the modeling techniques you need to know in order to produce really fabulous-looking rockets!

Picture 1

If you find this CD helpful, he has also made a *Building Skill Level 2 Rockets* CD ROM as well (http://www.apogeerockets.com/skill_level_2_book.asp). Picture 2 shows a screenshot from the video on how to prep a rocket for flight. This CD gives you some advanced techniques for when you become more proficient in your building skills.

Picture 2

Alternatives to the Basic Package

If you would like to try something a little different from the basic rocket (ready-to-go), then take a look at one of the kits that has either a video or still camera in it. The *Estes Snapshot Rocket* (http://www.apogeerockets.com/estes_snapshot.asp) or the *Estes Oracle Rocket* (http://www.apogeerockets.com/Estes_Oracle_Video_Rocket.asp).You can see these in pictures 3 and 4, respectively.

Picture 3

Picture 4

The *Snapshot* fires off the pad and after reaching the point of deployment of the parachute, the shutter on the camera in the nose cone is released and a photo is taken from about 500 feet in the air! On the other hand, if you like digital movies, the *Oracle* Digital Video Camera rocket allows you to capture live action video from on board your rocket. You'll be able to instantly download the video into your computer, and watch and feel what

continued on page 3

About this Newsletter
You can subscribe "FREE" to receive this e-zine at the Apogee Components web site (www.ApogeeRockets.com), or by sending an e-mail to: ezine@apogeerockets.com with "SUBSCRIBE" as the subject line of the message.

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continued from page 3

it would be like to ride skyward as a passeneger on the trip. At this time, the video software is only made for PC/Windows computers.

The *Snapshot* has a launch pad , launch controller, and 2 C6-5 motors that are included, but you will probably want more C6-5 motors (http://www.apogeerockets.com/quest_motors.asp). The *Oracle* has none of the extras, so you will need the pad, launch controller, and motors. For this rocket, you will need the *Estes Porta Pad 'E' Launch Pad* (http://www.apogeerockets.com/Estes_launch_pad.asp) and the Pratt Hobbies Go Box Launch Controller (http://www.apogeerockets.com/go-box_controller.asp). Picture 5 shows the launch pad and picture 6 gives you a visual for the launch controller. For motors, try D12-5s (http://www.apogeerockets.com/Estes_Items.asp), or for a real kick, slap in an E15-7 or E30-7 (http://www.apogeerockets.com/Aerotech_motors.asp)!

Picture 5

Picture 6

How High Did It Go?

Once you've flown rockets a few times, you may be like a lot of us and start to wonder, "How high did it go, exactly?" There is a solution for you in a device I've discussed in the last two newsletters. (For more on this, please see issue 173 http://www.apogeerockets.com/education/downloads/Newsletter173.pdf and issue 174 http://www.apogeerockets.com/education/downloads/Newsletter174.pdf).

Picture 7

The basic altimeter is a device that will allow you to find out the precise height that your rocket travels. We sell the *Perfectflite*

continued on page 4

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continued from page 3

15 K altimeter. This is shown in picture 7, and is available at (http://www.apogeerockets.com/Altimeter.asp). A data transfer kit is also available for this altimeter, which connects to either PC or Mac computers. It can be found on the same page as the altimeter. The software and cable will allow you to make graphs, so you'll get data showing the altitude of the rocket at any time during the flight. The software that comes with the data connection unit will automatically graph out the flight of the rocket.

What is neat is that you can also export the data to a spreadsheet program, and figure out the speed and acceleration of the rocket during the flight. Remember, speed is simply the change in altitude of the rocket, and acceleration is the change in speed over time. So with a simple spreadsheet program, you really have access to a lot of information about the rocket.

Picture 8

Talk About High Altitude!

A very "in-demand" kit is the *Apogee Aspire.* This model is shown in picture 8. The *Aspire* is always a fantastic flight. If you use the long burn F10 motor (http://www.apogeerockets.com/composite_motors.asp), it echoes and echoes and echoes as it ascends slowly and majestically. It isn't one of those punch-in-the-gut high speed flights. This is a nicely clean liftoff that is easy to see from liftoff to when the bright chrome streamer comes out at apogee.

The Apogee *Medalist* line of rocket motors feature ultra high-energy composite propellant and are designed for a special application: extremely long burn times for achieving ultra-high altitudes. They are intended for use in low-mass, extreme-altitude rockets.

Learn from the Expert

One of our most popular items for newcomers to the hobby is the book "*Model Rocket Design and Construction*" by Mr. Rocket himself, Tim Van Milligan. Tim is the owner of Apogee Components, Inc and has a unique background in that he is an actual Aeronautical Engineer who used to launch Delta II rockets from Cape Canaveral in Florida. This book is available at (http://www.apogeerockets.com/design_book.asp). and seen in picture 9.

Picture 9

This 160 page reference book is the classic "how-to" design manual for model rockets. With over 453 photographs and illustrations, this is the book that will turn you from an average modeler into a real rocketry expert. I remember when I got back into the hobby, I found Tim's book at the local library and was surprised that I could make my own rockets! At the time, I thought the only model rockets out there came in the form of kits and from one manufacturer. I learned a lot about building and general principles of rocketry. I personally and highly recommend that you get this for your rocketry library.

Specialty Interests

There are many areas of interest within this hobby, so if you want to move into some more challenging designs after you learn the basics, then here are a few suggestions.

Picture 10

The first type of rocket I'd like to touch on is the scale model. For this, we have the impressive 1/70 scale Saturn 1B (http://www.apogeerockets.com/Saturn_1B.asp) and the 1/70 scale Saturn V (http://www.apogeerockets.com/Saturn5.asp) rockets. Using many original engineering drawings and rare archive material, the Saturn 1B has been carefully researched and authenticated to bring the space enthusiast the finest replica ever produced.

The 1/70th scale Apogee Saturn V is the largest kit version in the world that doesn't require a special waiver to launch. It stands well over 62 inches tall and 5.6 inches in diameter. Erect it on your desk and it will nearly touch the ceiling. People coming into the room will have

continued on page 5

continued from page 4

Picture 11

no choice but to look up. It is a similar situation when looking at the real moon rocket, which stood 363 feet in the sky. You can see both these beautiful models in picture 10 with Mr. Rocket in.

Another unique type of rocket is one that has helicopter recovery, like the *Apogee Heli-roc* (http://www.apogeerockets.com/Heli_Roc_Kit.asp). The *Heli-roc* is something you should try if you're tired of same-old, same-old small rockets. Even though it is an older Apogee kit, it is still refreshing, unique, and does -- "something!" It is a model that spectators love to see you fly. It is shown in picture 11.

Conclusion

So as you can see, there many options in rocketry from the simple to the complex. How you advance is up to you, but you should always start out simple and easy, learn the techniques, and gain experience. Then you can move onward and upward, so to speak. Let us know if we can help. This is what we love to talk about!

About the Author

John Manfredo is the Education Coordinator and Newsletter Editor at Apogee Components. He is Level 1 High-Power Certified and has been building and flying rockets since the early 1970's. He enjoys passing his love of rocketry down to his kids.

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TIP OF THE FIN

For the tip this issue, I'd like to show you an easy way to paint the tip of a nose cone. Start by selecting a piece of cardstock that is large enough to keep overspray from getting on the rest of the nosecone. Measure the diameter of the nosecone at the point which you want to paint. Choose an object that is close to that diameter, which in my case is a bottled water cap. Place the object on the cardstock and trace around it as seen in photo 1. Then, cut the circle out with a sharp hobby knife, which is shown in photo 2 . Place it firmly and level over the top of the nosecone and paint it with your color of choice (photo 3). After it's dry, take the cardstock off and the finished product is shown in photo 4! The nosecones needed for this are at http://www.apogeerockets.com/nose_cones.asp.

Photo 1

Photo 2

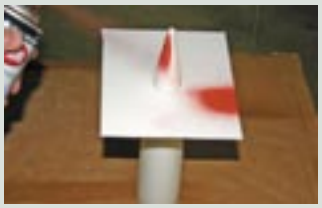

Photo 3

Photo 4

DEFINING MOMENTS

A ***Lawn Dart*** occurs when a rocket's deployment system does not function like it's supposed to and the model comes back at a high rate of speed. It is finally slowed down by its impact with the ground.

This issue I am picking on myself as I define what happend to my Aerotech Initiator a couple of years ago. I had set up my model on the pad with an F40-7 on a beautiful day. I went through my checklist; motor retention in place, parachute packed, igniter in place, etc. Deployment failure can occur for a variety of reasons, including the one I didn't check. That was the nose cone which was too tight because I added some masking tape to ensure that the loose cone would not come off upon acceleration.

Well, I taped it so well that it wouldn't pop off even with the kick of the ejection charge! The results were what you see in the photo on the left. i think I was able to salvage the fins, the parachute, and the shock cord. Fixing the rest was a breeze with Apogee's abundant parts supply! Check it out for yourself at http://www.apogeerockets.com/building_supplies.asp.

Web Sites Worth Visiting

I drive to work through the mountains from a little town south of Colorado Springs. On January 4th during my commute to work, I was treated to a light show in the sky like I'd never seen before! This happened to be about 6:15 a.m. when I looked up in the sky above the mountains and below a full moon and saw what many in Colorado described as "a brilliant light, streaking across the night sky." It turned out to be a reentering Russian rocket that had taken up a French satellite in late December. I'm telling you this because I want to give you the opportunity to see this as well and as close as you can get to the real thing! Go to (http://www.myfoxcolorado.com/myfox/pages/Home/Detail?contentId=1961501&version=28&locale=EN-US&layoutCode=TSTY&pageId=1.1.1) to see.

As reported on Fox News' website , "Experts at Peterson Air Force Base near Colorado Springs say it was a Russian SL-4 rocket body that re-entered the atmosphere over Colorado and Wyoming. The rocket was used to carry a French astronomy satellite called COROT into space on December 27, 2006. Calls started pouring in to law enforcement authorities and FOX 31 News around 6:15 a.m., as thousands of people from Colorado, Kansas, Nebraska, and Wyoming reported seeing the streaks of light racing across the sky from north to south.

Residents of New Mexico reported that when only 3 or 4 lights remained, the object was passing directly over the Four Corners area. If you play the video that is the second from the top, the traffic reporter stumbles over his words when they switch videos on him in order to show the rocket. Watch these; for they say a picture is worth a thousand words!

Customer Comments

I am a 60 year old man, a born again rocketeer as I used rockets to have fun and teach my sons many years ago. I remember many rainy days of fun building rockets around the dining room table, then enjoying much more fun spending time with my boys launching the rockets we built together. We helped many grasshoppers earn their “astronaut wings” and cracked a good number of eggs from the kitchen. I’ve now begun again, and am using rockets once more, this time to spend quality time with my grandsons.

I am now 100% disabled and must use a power wheelchair. Getting out to shop around town is a minor ordeal for me. As I have no hobby shop nearby that carries more than a couple of rockets, I find that shopping on the Internet is my only real option to find a wide selection of rockets and accessories. To say I was leery of Internet retailers would be an understatement, as I have had more than a few real problems with unscrupulous vendors. Your firm has been a wonderful find for my grandsons and I. We don’t have to settle for one or two old kits with dust on them, or the occasional starter kit at a toy store, we have an incredible selection from which to choose at Apogee. We’ve ordered repeatedly from Apogee and have received all our orders in great shape, and fast too! And when we finally had a small problem (manufacturer’s defect) with a product ordered from Apogee, your firm happily (and immediately) corrected the problem.

Please accept my gratitude for your excellent lines of products, the fast and accurate shipping and especially for your standing behind your products and helping your customers when they have a problem. Your firm has restored my faith in Internet vendors to the point that we don’t even look at other’s web sites any more. When we need to reorder - it’s Apogee for us!

Sincerely,
Larry James

Question & Answer

This issue's question comes from Clint who says, "I'm seriously considering some level one kits for several presents. These will be for the over 60 male children in our group. Albeit intelligent and somewhat responsible guys, but one never knows. How much space does the average rocket need, like the camera rocket? A football size field or WIDE open spaces? One lives in Lake Zurich, Illinois...the other in Houston Texas."

The answer to Clint's question may be found on the National Association of Rocketry's website at http://nar.org/NARmrsc.html. The table shown gives the appropriate launch site dimensions for launching up to 2 'G' motors, which is equivilant to an 'H' motor.

LAUNCH SITE DIMENSIONS

Installed Total Impulse (N-sec)	Equivalent Motor Type	Minimum Site Dimensions (ft.)
0.00--1.25	1/4A, 1/2A	50
1.26--2.50	A	100
2.51--5.00	B	200
5.01--10.00	C	400
10.01--20.00	D	500
20.01--40.00	E	1,000
40.01--80.00	F	1,000
80.01--160.00	G	1,000
160.01--320.00	Two Gs	1,500

If you have a rocketry-related question that you need an answer to, please drop me an email at johnm@apogeerockets.com and I will do my best to find an answer for you.