

Kit Review: **BA-349 Natter**

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# SPORT ROCKETRY

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## NASA STUDENT LAUNCH INITIATIVE:

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**LITTLE  
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in the World — Part 2

AN INTERVIEW WITH VERN AND GLEDA ESTES

# THE GOLDEN DAYS OF MODEL ROCKETRY



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part 1



**Editor's note:** For several years now I've been asking Vern Estes to write an article about the early days of model rocketry. But it's often difficult to get started writing an article, so at NARAM-47 Vern suggested that I submit a list of questions to him, and he and Gleda would respond. I was certainly pleased with the result, and I hope you enjoy it too. Part 1 appears below.

**Sport Rocketry:** Let's start with some biographical information. Where were you born and raised, where did you go to school, what were you doing prior to getting into the rocket business?

**Vern:** I was born in 1930 in St Joseph, Missouri, and spent the first 13 years of my life near there. I mostly lived on farms where I helped with the farm animals, plowed fields, and did many other activities young farm boys do. My parents encouraged us to do things. Once a neighbor told my father that I was too young to be driving a tractor and might get killed. Dad told him, "I'd rather have a dead boy than one that doesn't know how to do anything"

and went on about his business.

When I was 13 the family moved to a small farm a couple of miles west of Fountain, Colorado. World War II was going full tilt. Dad had a fairly large operation raising turkeys. I remember on one occasion we had some German prisoners sent over from the local military base, Camp Carson, to help with a special project. Dad had to leave to run into town. He handed me a rifle and told me to guard the prisoners. I'm glad they didn't want to escape, as I do not know what I would have done.

My older (by one year) brother Earl and I had cleaned out an old chicken shed, patched up most of the holes in the walls and roof, and moved in. We set up an electronics shop in one room and used the other for a bedroom. A radio repair shop was closing in Pueblo so Dad bought some closeout supplies so we could have some parts and components to work with. I still have a lot of very old resistors, capacitors, and other items of that day. I guess I should look for someone who collects that kind of stuff and get rid of it.

Gleda, daughter Betty, and Vern Estes holding their payload rockets at the first international rocket meet in Dubnica, Czechoslovakia (1966). Gleda won 3rd place in the payload event, and the Estes family as a team won two large glass trophies.



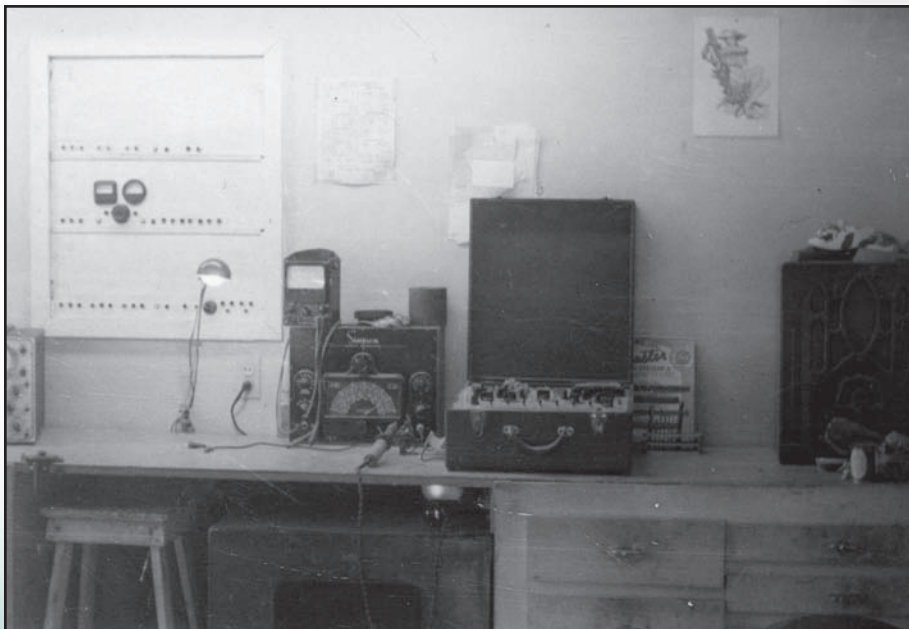
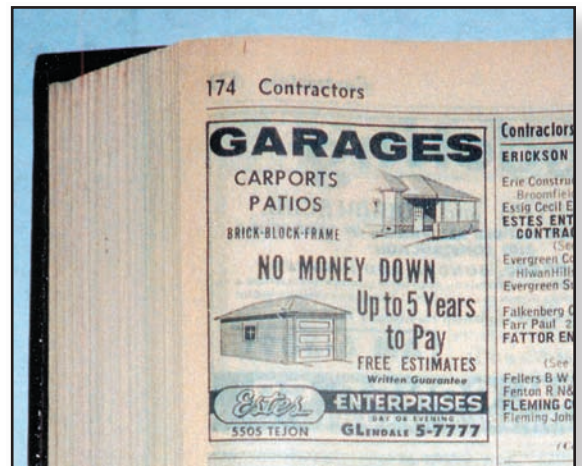
Above: Rag-tag Missouri farm kids in 1936. Left-to-right: Vern holds a goat, sister Carol a pony, and brother Earl is holding the Estes family dog.

Below right: The Estes Enterprises ad in the 1959 Denver yellow pages. Estes Enterprises built garages, additions, and similar projects in Denver in the 1950's.

Then in 1945 disaster struck. A disease hit the turkey flock and completely wiped out the operation. Dad sold everything at auction and in the spring of 1946 we moved to a 5-acre tract on North Tejon Street in Denver. Earl and I set up our electronics shop in the pump house and did occasional radio repairs. I had a part-time job at a soft drink bottling plant and earned enough to buy an NC-173 ham radio (which I still have). I wanted to get a ham radio license, but never had the ambition to learn the required Morse code. After graduating from Westminster (Union) high school, I began studies at Central College in McPherson, Kansas.

My studies at Central College ended early. It all happened in chemistry

1948—Vern and his brother Earl repaired radios for friends and neighbors in their electronics lab in Denver. Just as model rocketry played a role in the interest and careers of many Estes customers, this activity helped guide Vern's interest into technical areas.



class. A young lady across from my lab unit kept flirting with me (she says it was the other way around). Gleda and I started seeing a lot of each other and toward the end of the year we decided to get married. That was the end of my college studies except for some part-time classes at the University of Colorado Extension in Denver over the next several years.

**Gleda:** I was born in 1932 and grew up in the farming community of Clarinda in southwest Iowa about 90 miles from where Vern was born, but we didn't meet until we went to the same college in McPherson, Kansas.

**SR:** What were you majoring in at Central College?

**Vern:** Central College, at the time, was a 2-year Christian college. I had not established a major. I was in my freshman year with an interest in "everything." In addition to my regular studies in English, Economics, and Chemistry I took a machine

shop class where I learned electric welding, rudimentary lathe operations, and a few other things. Not a very advanced course of study but it no doubt was helpful when it came to building Mabel (our first rocket motor production machine).

Central College was also referred to by some as a "match factory." So I guess the most important things I got from my college days at Central were learning to weld and run a lathe, and hooking up with a wonderful wife and helpmate. Even our classmates at Central forecast how our future would play out. At the Valentine Banquet a fellow classmate made the prediction, "Estes made his fortune on inventions it is true... With Gleda as his helpmate didn't you expect him to?"

**SR:** Did you build models when you were young (airplanes, ships, trains, anything)?

**Gleda:** I did not build models. However, I was into sewing and other handcrafts as I was growing up (sewing, knitting, crocheting, tatting, embroidery).

**Vern:** My model building experience was very limited. When we lived at Fountain I became ill and was unable to attend school (the problem was never diagnosed). I spent several months in the house, mostly in bed. My mother bought me a model airplane so I could have something to do. I built the plane but it was never flown. That was my entire prior modeling experience.

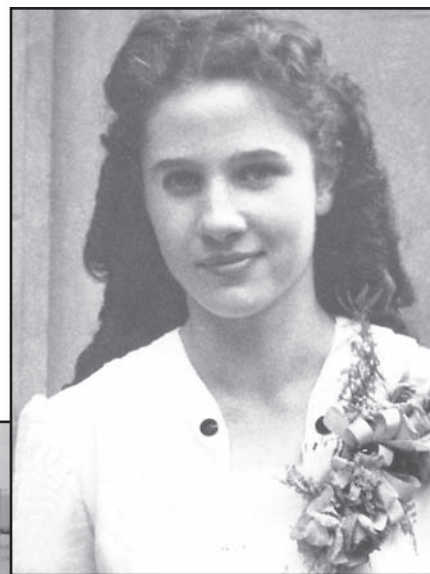
**SR:** When and how did you first learn about model rocketry?

**Vern:** My first knowledge of model rocketry came from G. Harry Stine. Model Missiles was a fledging Denver-based company at the time. The rocket motors they were getting from Brown Manufacturing Company (Zenith Fireworks) worked, but lacked reliability. G. Harry was looking for a better source. He contacted the three fireworks distributing companies in Denver in hopes of locating a suitable supplier. My

G. Harry Stine's signature appears on the first invoice for delivery of rocket engines ('motors') to Model Missiles in January 1959. Estes was still operating under the name of the construction company, Estes Enterprises, at the time.

parents ran a company called "Mile High Fireworks." When Harry called he talked to my mother, Myrtle Estes.

I was running a construction business at the time called Estes Enterprises. Gleda was working as our office manager and bookkeeper. We had also helped my parents with their fireworks business by manufacturing several fireworks items. In doing this I had built equipment to load powder into tubes and cones to make various items such as sparkling fountains. So when mom got the call from Harry she knew that Mile High could not help, but



Gleda at age 14.



Gleda prepares to fly her rye crisp rocket during an Astron Rocket Society food rocket contest in 1964. The rocket had rye crisp fins, a meatball nose, and a body tube covered with spaghetti. It was a winning entry.

think about his proposal for a few days. I made my proposal to him after a few weeks and began construction of Mabel in July.

**SR:** Did Gleda see the demo flights by Harry?

**Vern:** Gleda did not see Harry's demonstration launch. However, she remembers well the excitement she saw in me when I told her about it. She said I acted like a kid with a new toy.

**SR:** How did you end up selling rocket motors directly to the consumer?

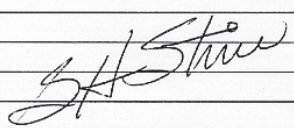
**Vern:** I knew that if I were to make rocket motors for Harry I would need to build some specialized equipment. I had taken some shop classes in school and learned to weld in college, although I was by no means an expert. I had previously built

suggested her enterprising son might be interested. This was in May of 1958.

We soon arranged a meeting and Harry brought out one of MMI's Aerobee Hi rockets to demonstrate. WOW! I immediately felt this guy was on to something. Harry said Model Missiles expected to need about 5,000 rocket motors per day. I told Harry I was scheduled to go into the hospital for some tests and would

some specialized equipment to use in my construction business and, later, a machine to manufacture fireworks components for Mile High. So, I began to think about what it would take to make Harry's motors. Five thousand motors a day would be no small task. Just what would it take to build such a machine and did I have the ability to do it? These were the questions I pondered as I searched for an answer. I knew it would have to be done "on the cheap" since our financial resources were extremely limited.

As we go through life we all gamble on our future—some more than others. I

ESTES ENTERPRISES				
5505 Tejon Street Denver 11, Colo.				
CUSTOMER'S ORDER NO.	DATE		1959	
NAME <i>Model Missiles, Inc.</i>				
ADDRESS <i>1165 S. Cherokee</i>				
BOLD BY	CASH	C. O. D.	CHARGE	ON ACCT.
			<input checked="" type="checkbox"/>	
QUAN.	DESCRIPTION		PRICE	AMOUNT
<i>500</i>	<i>Type A4 motor</i>		<i>@ .07</i>	<i>35.00</i>
				TOTAL
ALL CLAIMS AND RETURNED GOODS MUST BE ACCOMPANIED BY THIS BILL.				
No. 67061				



Early model rocket manufacturers (1963). Left to right - Vern Estes, John Rakhonan, Irv Waite, G. Harry Stime, and Lee Piester.

think I lean more toward taking chances than many. So delving into an unknown future, based on gut feel and imagination, was sort of to my liking. Without a clear picture of just how I might accomplish the task, I told Harry I would make motors for Model Missiles and would do so at a price that would be a lot less than they were currently paying. That optimism would soon meet reality.

First, there was a matter of the time and cost of building Mabel. I didn't have much in the way of financial resources and my construction business suffered because



Vern stands by the Astron Scout display behind his desk in 1964. This display was originally built to exhibit the young company's products at a meeting of the Mile High Section in Denver (when the Astron Scout was their only kit).



Oldest daughter Betty launches a rocket from the front yard in 1967.

of the time I was spending on this project. Then the biggest dose of reality came when I was ready to ship: MMI was not in a position to buy the quantity of product I had worked so hard to provide. Not realizing it at the time, it was my misfortune that turned into my fortune.

**Gleda:** The first Mabel was designed to produce the 5,000 motors per day at the request of MMI, but that turned out to be more motors than MMI could sell. We had a considerable investment of time and

Gleda conducts business by phone in the new office building while waiting for office furniture to arrive in 1968.



Gleda and Vern receive an award from the Boy Scouts in 1973 for their contribution to build the Scout Service Center in Pueblo, Colorado.

Vern at his desk in his new office, shortly after they moved into the new office building on the corner of Highway 50 and H Street in 1969.



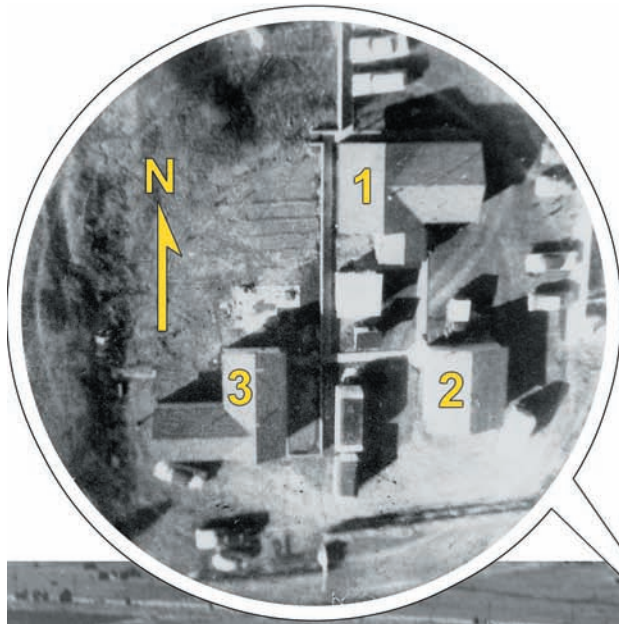
money in Mabel and the only way to recover that was to market the product, so in self defense we formed a company to produce and sell the motors (and later, parts and kits).

**SR:** When did you decide to form Estes Industries?

**Gleda:** We decided to form Estes Industries strictly for the Model Rocket business. We had another business (construction) at the time and needed to differentiate between the two: costs, assets, income, labor, etc.

**Vern:** I was making a living as a contractor in Denver. I started this business shortly after Gleda and I were married in the early 50's. My focus was on small jobs with an emphasis on building garages. At the time I became interested in providing motors to Model Missiles, I had six employees. Gleda, one of the employees, ran our small office, made appointments, and did the bookkeeping. The company was called Estes Enterprises. As I began to see the potential of model rocketry I decided to sell the construction business. The name of the new company would be Estes Industries with the initial address of 5505 Tejon Street, Denver 11, Colorado.

Unfortunately, I can't tell you the exact date we formed Estes Industries. The early corporate records were stored in the attic of the original office in Penrose. This



**Above, right:** 1961 photo of the original Penrose office. Art Hunter and Freeland Gafford are digging a foundation trench for the first addition to the building.

**Above:** The circular image at the top is a 1965 Camroc photo of the original Estes office site showing the main office (1), shipping (2), and R&D (3) buildings.

The R&D building also housed the printing and photography departments. The large image above is a 1968 aerial photo showing the original office site (4), Estes family residence from 1961 to 1972 (5), woodshop (6), machine shop (7), packing department (8), original Mabel I building (9), newer engine manufacturing area (10), small wind tunnel building (11), and the nearly completed new main office building (12). The cleared area (13) is where the main warehouse was constructed that same year.

building had been converted into a residence for my brother and his family when he came to work at EI. After he moved out, the building was put up for rent. A fire broke out when the new occupants were moving in and all the old records were lost.

Both Estes Enterprises and Estes Industries existed simultaneously for a while. After I made a final decision on a career change I sold Estes Enterprises to an employee of the company (that was shortly before moving to Penrose). The construction company is no longer in existence.

**SR:** *When and why did you decide to move Estes Industries to Penrose?*

**Gleda:** Sometime in 1960, after we had an explosion of the propellant in Mabel, we felt we were a little too close to our neighbors (they thought so too) so we began looking for a larger area to locate our plant and our living quarters. We looked at land in and around Denver, but it was pretty pricey. Then we looked farther afield: Henderson, Roggin, Wiggins, etc., but found nothing suitable with access to a major highway, a railroad to get our powder delivered, and an available workforce.

Then the wife of our one employee, John Schutz, suggested we look at land in Fremont County. Her father was a realtor and she wanted to move

The Machine shop, left, Woodshop, right, and Mabel I house in the background, as they appeared in February 1963. Both shop buildings were expanded with additions later.



closer to her family. We four spent the day with her father and looked at several properties. The small 35-acre farm we ended up buying was priced within our means, had a (barely) livable house on the property, and an adjacent five acre property, which we also purchased, had a building we could use for an office and shipping facility for a while.

**Vern:** Our operation on Tejon Street just north of Denver was in a sparsely settled residential area. While we had never had a problem with any officials (I don't think they even knew about our operation) our closest neighbor was not at all pleased. So, following an explosive incident with Mabel we began looking around. John Schutz was our Mabel operator and knew we were looking for a suitable location. He and his wife Betty had previously lived in the Cañon City/Penrose area and suggested we drive down and take a look. Betty's father was a realtor and showed us several properties including a small farm in Penrose. It was available at a reasonable cost, located on a major highway, and had an old farmhouse for living quarters as well as an open space for a fledgling business to grow. We acquired an adjoining property that had a small two-room cabin from a couple that lived in Oklahoma. This building became our first office, kit assembly, and shipping facility.

Construction on three additional buildings was started almost immediately. I was busy laying cement blocks for a foundation when a local news reporter stopped by. Clippings from the Florence Citizen captured the construction scene in their photos and offered headlines that declared "Toy Rocket Firm Now In Penrose."

**SR:** How did the move to Penrose affect the Estes family life?

**Gleda:** I was born and raised in a rural setting. They say you can take the girl out

of the country but you can't take the country out of the girl. I was more than ready to leave the metropolis of Denver and move to a quieter place where we could raise our children. We had trouble getting used to drinking "irrigation" water, even when heavily chlorinated, and for a few years things were a little primitive. However, the girls enjoyed being able to have a dog, horses, and many cats. They enjoyed going to good schools with good caring teachers and much less crowded classrooms than they would have had in Denver. I don't think any of our family was disappointed that we left the city for the country. We used to watch the New Year's Eve fireworks on Pikes Peak from our dining room window in Penrose. Yes, it was quite a change, but a welcome one.

When we moved to Penrose our youngest daughter, Linda, had just come into the world, Sharon was 5, and Betty 9. Actually, Vern moved to Penrose in early July of 1961 before the girls and me. Before operation could begin in Penrose, facilities for the operation had to be constructed, so Vern went on ahead along with Andy, an employee from our construction business. Vern, Andy, and a local carpenter, Art Hunter, took about a month to construct a building for Mabel, a machine shop, a wood shop to make nose cones, and a warehouse. In the meantime I was taking care of a young baby (Linda, born May 23, 1961) and running the operation in Denver.

All three of our girls built rockets and participated in one way or another as the company grew. Betty was one of our early "kit instruction" testers. She also worked as a tour guide and attended many rocket meets, including competing in the first international rocket meet in Czechoslovakia in 1966 (as a family team we brought home three trophies). Linda learned to build rockets at an early age and was an enthusi-

astic member of the Astron Rocket Society. Her first "rocket" attempt consisted of an Aerobee Hi plastic nose and some plastic fins with paint and added decals when she was 3½ years old. She later went on to become a very good model builder and flew competition with us at local meets and as a team at NARAM. All three girls participated in competition from time to time. Sharon also helped run the retail store at NARAM, but her main interest was in the two horses she kept in the pasture across the street from our house. As the girls grew up, they enjoyed a variety of opportunities provided them by the "country life."

**SR:** What was the first rocket each of you built? Did Harry give you a Model Missiles Aerobee Hi kit to build?

**Vern:** The Aerobee Hi kit Harry gave me to build is still in its original box. I may get around to building it (if I can find it).

When Harry demonstrated his Aerobee Hi rocket to me, my observation was that it flew well but the fins seemed a bit weak. I knew I could build a better rocket. So into the machine shop I went to build some durable fins. The brass fins were durable all right, but the flight was something else. That rocket took off the pad, turned sideways, and selected the place I was standing as its destination. After that I was convinced of the merit of what Harry had been saying about the relationship between the center of pressure and center of gravity.

This experience proved important in how we approached the market with our products. We placed an emphasis on proper balance in our literature and built the Astron Scout to carry the point home. I called the Scout the rocket that could fly "up" but couldn't fly "down." I'll admit the fins on the Scout were not a strong point, but the lesson on balance was still there.

**Gleda:** I participated in the first group testing the instructions and the kit itself for the Astron Scout. My next rocket was built from one of our plans, the PeeWee. This was done after we started the Astron Rocket Society in Penrose.

**Vern:** Gleda has always been a better model builder than me. Unless it is a very special model I do not have the patience to do a good finish job. I just want to get something that works and "watch her go." I admire those that have the patience to do beautiful modeling work. After spending hours and hours getting it just right I often wonder how they have the courage to press the button.

In Part 2 we will learn all about Mabel, the motor making machine.



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