

Reminiscences of the early days of model rocketry.

By Barbara K. Stine NAR#17

Harry Stine Background/History

Stine, G. Harry (March 26, 1928-November 2, 1997). My husband was five years older than I. He had several great loves of his life and the people involved in each of these did not necessarily know about each other. They were general aviation (he was a pilot); Golden Retrievers; science and engineering; science fiction and writing. Harry had a degree in physics (physicists just think differently than most other people), but he happened to be a very literate engineer. He spent more of his professional life as an engineer than as a physicist.

His father's name was George Haerberle Stine and his official name is George Harry Stine. Early-on he became known as "G. Harry Stine." Professionally he wrote both scientific papers and fiction works at the same time. G. Harry Stine wrote non-fiction papers. Stories were written by "Lee Correy." The pen-name was not a secret. However, the twelve "Warbots" novels and three "Starsea Invaders" novels near the end of his career were published under the G. Harry Stine name because the publisher thought that name was better known.

Harry grew up in Colorado Springs, Colorado. The family home, 9 Oak Avenue, is in the Broadmoor area of that city. His father was an ophthalmologist (eye surgeon) and quite a socialite. Dr. Stine was known for retinal detachment surgeries. Harry observed surgery frequently. He had a sister, Barbara, who was two years younger. Their mother died of leukemia Thanksgiving Day when Harry was eight and his sister was six. There followed a succession of stepmothers. In those days Barbara was sent back East to finishing school (which she hated) and Harry was sent off to New Mexico Military Institute in Roswell for his four high school years when it was cavalry. He rode horses every day, studied and got his pilot's license there before he was old enough to drive. (He swore he would never get on a horse again!) That was before he met horse loving me. He flew and landed single engine airplanes on an airstrip near the entrance to what is now the Air Force Academy.

His closest friends at home were Bucky Ingersoll and Dave Barsotti. Dave's mom was a classmate at Colorado College with my mother. Harry went to the University of Colorado in Boulder when all the GI's were returning from the WW11. He had a roommate, Richard Keller (who has used Harry's "Mountain Air," written to D'Indy's "Symphony on a French Mountain Aire," as an inspirational opening to lectures ever since). Later Harry joined a fraternity there. It was just assumed that he would study to eventually become a medical doctor. It took him several years to stand up to his father and announce that he would become a scientist but not an M.D.

Harry started writing plays as a youngster with his marionette, Clipo the Clown. At the University of Colorado in Boulder, he was writing plays broadcast on the campus radio station. He became interested in the physics of how radio worked. Because he had changed majors several times in Boulder, he did not graduate in four years. The Stine home in the Broadmoor area of Colorado Springs burned down in the summer of 1951 and the family was living in the basement apartment of the old Antlers Hotel in downtown. Their Dad told Harry and his sister (Barbara) that they would have to continue their education at Colorado College in town instead of going back up to Boulder. Because certain physics courses were not offered every year at CC, it took another two years for Harry to complete his college education. During that time his sister married Harry's fraternity "father" and became Barbara Gates.

Robert (Bob) Heinlein also lived in the Broadmoor and was a mentor to Harry. Through Bob Heinlein, Lurton Blassingame became Harry's literary agent in New York. Bob Heinlein became a very influential part of Harry's and my lives at this time. Harry gave a cat to Bob and Ginny (Virginia) Heinlein that became the subject of Bob's "Door into Summer" book. A later book, "Have Spacesuit – Will Travel" was dedicated to Barbara and Harry Stine. Harry's Dad, was a sportsman and loved deep sea fishing. Upon returning from fishing off the coast of Mazatlan, Dr. Stine had a sudden stroke. Harry picked me up and we went together to the hospital. Doctor Stine was dictating until he went under anesthesia. It was discovered that he had split his aorta. It was before DeBakey stents. Suddenly Harry was given the keys to be the man of the house. Also, Dr. Stine knew that Harry and I planned to get married and he had been rooting positively for us. It was just two weeks before Harry would be graduating from college with a Bachelor of Arts degree in physics. Under the circumstances, we decided that it would not be appropriate to have a big wedding back east. My mother was ill and said she would not come for a wedding in Colorado Springs and my Dad said he agreed with her. I assured them that I was not pregnant and that I was not going to elope. My Dad sent me money to plan my own wedding. Bob Heinlein would give me away and we would be wed in the chapel at Colorado College (where both my mother and I had been initiated into the same sorority). There would be a best man and matron of honor (Del and Judy Hitch) with a reception at the Heinlein's home. We would spend our honeymoon traveling to Las Cruces, New Mexico. Harry had a job waiting at White Sands Proving Ground. I would continue my education in the morning at New Mexico State University. Our friends, Cecil and Barbara Post, had set me up for a job at the Physical Science Laboratory (PSL) in the afternoons.

I am going to back up a little bit here and talk about Harry as a private pilot. We had a single engine Cherokee 140. Harry spent every Thursday evening for several years trying to convince the FAA (Federal Aviation Administration) that the Terminal Air Control (TCA) for Sky Harbor in the middle of Phoenix out here in the wild and woolly West needed to be handled differently than TCA's on the East coast. When he visited places like Czechoslovakia, they could not believe that he was a "private" pilot because all pilots in those countries were part of the military. Without fuel the Cherokee weighed less than my quarter horse!

Harry loved Golden Retrievers. My brother, Donald Kauth, founded Guiding Eyes for the Blind in Yorktown Heights, New York in 1944. For over thirty years we bred Golden

Retrievers in New Canaan, Connecticut and then in Phoenix, Arizona. Harry was President of the Rio Salado Golden Retriever Club in Phoenix, which also ran a Golden Retriever Rescue. Our Goldies had no qualms about flying in our airplane. They just hopped up on the wing and into the empty back seat area and went to sleep. Harry delivered a Golden Retriever puppy to Pat Miller in Albuquerque via the Cherokee. Every summer we hosted a pool party for the Golden Retriever Club. I still have the posters showing club activities. One poster shows a picture of 17 Golden Retrievers lined up around the edge of our backyard swimming pool. What other breed would continuously retrieve with never a growl or fight?

Model Rocketry History:

Harry created and was editor of "Missile Away" for the American Rocket Society. He was a member of the British Interplanetary Society. He was a member of The Explorer' Club for his observations of the opposition of Mars in Sunspot New Mexico and near Datyl, New Mexico. His first science fiction novel was an Ace Books double book novel, "A Star to Steer Her By" "Starship Through Space" by Lee Correy was published by Henry Holt and Company New York, in December in 1954. There was a strict formula to be followed. Our hero did not smoke or drink, no girlfriend, but was smart and adventurous. Bill Llewellyn, was a top notch illustrator at that time. The president of Henry Holt sent the author a beautiful leather bound copy of the book.

"Rocket Man" was published in 1955. It was dedicated to the Co-op Students of The New Mexico College of Agriculture and Mechanic Arts and White Sands Proving Ground. This was the first co-op program west of the Mississippi River. Northwestern University on the east coast had the first co-op program. International Geophysical Year (IGY) 1957-1958. Arthur C. Clarke, former chairman of the British Interplanetary Society remarked: "Why get excited about anything that doesn't go straight up? There are two things without which a civilization cannot exist: Communications and Transportation." Harry was writing articles for Mechanix Illustrated. He was well aware of the youth rocketry problem. The February 1957 issue talked about safety rules for amateur rocketry that were derived from the professionals. It was called "The World's Safest Business." On January 28, 1957, Harry received a letter from Orville Carlisle, a shoe salesman from Norfolk, Nebraska. Mr. Carlisle offered to send Harry some samples of his model rockets. They arrived via Railway Express at our home at 1100 Circle Drive, Las Cruces, New Mexico, in a box covered with big red "fireworks stickers." The package contained three built-up MarkII Rock-A-Chute models and three unassembled Mark II's in "kit form." Included were several dozen replaceable solid propellant motors 1/2" in diameter and 1 1/4" inches long, plus two launch pads. Harry stored the extra motors in a metal box, which he placed in the farthest corner of the back yard. Carefully following Orville's instructions, he prepared the model for flight and took it across an irrigation ditch into a very large and empty field for flight. Several models flew perfectly, returned to earth via parachute and landed softly. Could this be the solution to the youth rocketry problem? The ignition system via fuse was not safe. Both Orville and Harry simultaneously developed electric ignition for the model rocket motors in early March 1957. Harry put the motors through static stress tests, as well as heating them in our kitchen oven to see if they would ignite (and then telling me afterwards!). Harry called

some of his colleagues from White Sands to inspect these first model rockets. They were R. Gilbert Moore, Robert Daly and Nathan Wagner. Later, at Daly's house in Las Cruces, they carefully cut open a Carlisle model rocket motor to discover that it was state-of-the-art pyrotechnics. The first three young model rocketeers were Jim Post, Dave Post and Alden Tombaugh. Pictures of them recovering Rock-A-Chute models are found in "Handbook of Model Rocketry" by G. Harry Stine and in "Handbook of Model Rocketry" seventh edition by G. Harry Stine and Bill Stine, published by John Wiley & Sons, Inc. in 2004. An interesting story follows: We had a 1950 DeSoto station wagon. It had wooden sides and the metal parts were painted a bright blue. We nicknamed it "The Carlter Wagon" after the Carlter Ship and Drydock Company in "Starship Through Space." Harry usually carpooled to White Sands Proving Ground. However, sometimes he forgot and had the keys to both cars and I needed to get to my classes at MSU. The solution was to insert a table knife into the ignition and off we would go. This only worked going forwards and not in reverse, so I had to park where I could safely drive forward. When we moved from Las Cruces to Colorado, I drove the station wagon there with baby Ellie and Harry drove behind me with Connie. The wagon faithfully supplied transportation during the early days of Model Missiles, Inc. and to and from Arapahoe County Fairground west of Denver for model rocket launches. When we left Colorado for New Canaan, Connecticut, Harry sold it to Vernon Estes. Harry had written two books in 1957 before coming to Colorado to interview for a job with the Martin Company. They were "Earth Satellites and the Race for Space Superiority" and "Rocket Power and Space Flight." The Russians launched Sputnik I on October 4, 1957. It was a Friday. My parents were in Denver to see our new home at 6180 Fairfield Drive, Littleton, Colorado. Associated Press called Bob Heinlein, who referred them to Harry because of the "Earth Satellites...." book. Harry gave a quote from his book (the truth) and all "Hell" broke loose. (Werner von Braun is said to have gone into hiding so he could not be contacted). The only satellite program currently in the United States was "Vanguard" being developed by Martin Marietta back east. Somebody there panicked and told the Martin Company in Littleton to "fire that guy." So Harry was called in early Saturday morning and told to clean out his desk because he was being fired. The ACLU called to offer to get his job back. His answer: "Why would I wish to work for a company that had just fired me?" But Harry was an engineer from Colorado who was also educated in Colorado! Now the headline in "The Rocky Mountain News" was three inches tall: "Martin Fires Engineer." Everybody knew that Harry had told the truth. On the morning of July 8, 1957, Harry met Orville (who did not like to fly in airplanes) at Denver Union Station. Lawrence Brown of Brown Manufacturing Company and Zenith Fireworks Company in Clinton, Missouri also came to town. My Dad, Willard L. Kauth, was staying at the Brown Palace Hotel in Denver. The next day all went out to Arapahoe County Fairgrounds west of Denver to fly some models. It was decided that each would put in a couple thousand dollars, make a trial run of 3,000 kits with motors and launcher included, and then determine where to go from there. My brother, Donald Z. Kauth, back in New York became interested in selling model rockets by direct mail, a subject in which he was an expert. His idea of direct mail turned out to be correct in the long run. We decided to call the company "Model Missiles, Inc. or MMI because it was felt that the word "rocket" was too closely associated with fireworks.

Sputnik fired the imagination of young people all over the United States. We were convinced there was a market for safe model rocketry. “Sputnik allowed me to devote full time to model rocketry. I was fired by Martin Company on October 5, 1957 for telling United Press that the Soviets had used their ICBM to launch a vehicle (Sputnik) which meant that the entire United States was open to nuclear ICBM attack ... and that the United States was not first in space because we did not have a serious space program (under the Eisenhower administration). I got a lot of newspaper publicity which I put to good use for MMI and model rocketry.” Also, the Mechanix Illustrated article came out in October 1957. Orville Carlisle received over 10,000 letters within weeks and he had to return \$5,000 in cash that had been sent to him by readers who wanted to buy those model rockets and motors right away, but we were not ready to ship yet. Model Missiles Inc. was officially chartered as a Colorado corporation on October 10, 1957 by Harry’s college friend, attorney Robert S. Appel. The response to the magazine article convinced Harry that, indeed, there was a market for model rockets.

“I rented a store front office-factory at 1159 California Street in Denver and got busy establishing a business, doing the final product development, ordering parts and inventory, designing packaging, working out advertising and promotion programs, and setting up the world’s first model rocket production line. This was no small task for a technically-minded person who had spent his entire professional career in civil service with no free enterprise experience whatsoever!”

On October 22, 1957 Harry and Orville Carlisle visited Brown Manufacturing Company in Clinton, Missouri. Lawrence Brown explained that he rolled his own tubes for his Buzz Bomb Helicopter firework and it would be much cheaper if we would settle on this same size for our model rocket motors (2.75” long and 0.69” in diameter). The worldwide standard model rocket motor casing is 2.75” long (70 millimeters) and 0.69” in diameter (18 millimeters). All subsequent manufacturers were held to this standard, except for the larger models and motors.

An agreement was drawn up between MMI and Orville Carlisle to pay him a royalty of 25 cents on each kit and 5 cents on each model rocket motor sold by MMI. Short-sightedness in basing the royalties on fixed amounts of money rather than upon a percent of the retail price or MMI price was a major mistake. It sowed the seed of the eventual demise of MMI.

Harry’s college friend, J. Delano Hitch was living in Denver at this time and became an ardent model rocket buff and one of the early empirical experts. He helped with product development and testing. Del would meet Harry at the MMI office on Friday nights to build models and then go out on Saturday morning to fly them. Soon two Littleton teenagers, Arthur H. Ballah and Grant R. Gray (who had been experimenting with zinc-sulfur rockets and who had burned his arm badly) joined the test crew. By word of mouth, the MMI Flight Test Crew grew rapidly. The teen-age rocketeers would show up on Friday night and MMI supplied all the advice and parts they wanted. Saturday morning all went out to “Green Mountain Proving Ground,” a 540 acre tract of land just west of the old Denver Federal Center. It had been an ammunition dump during World War II. “That winter of 1957-1958 I learned what these teen-agers would do with parts and equipment.

I learned how to design and write for them. And I learned that model rocketry was, indeed, the answer to the youth rocketry problem of the time.”

Richard D. Keller, one of Harry’s classmates, joined MMI in December 1957. He wanted to introduce model rocketry into the established hobby trade. MMI took out a display booth at the Annual Trade Show of the Hobby Industry Association of America, held at the Sherman House in Chicago in late January 1958. Four of us were there: Orville Carlisle, Dick Keller, Harry and his wife, Barbara. Response there was both guarded and enthusiastic. It was guarded because model rocketry was new and untried and enthusiastic because model rocketry was really something new.

The first MMI kit was a semi-scale model of the Aerojet-General Aerobee-Hi, roughly one-tenth scale. William Gore at Aerojet paved the way for MMI’s permission to use the Aerobee name. The instruction booklet with this first MMI kit was designed along the lines of a Heathkit instruction manual with step-by-step illustrated instructions. The instructions had to be very, very complete because most young men building their first model rocket had no previous experience with building any sort of flying model.

The first kit, MMI No. 001-A Aerobee Hi, rolled off the production line on the evening of April 14, 1958 and resides in the National Air & Space Museum of the Smithsonian Institution because it was put away for that specific purpose.

It became obvious that the youth rocketry problem would not be totally solved just because MMI made safe, workable model rockets available in hobby shops and by direct mail to anyone who wanted them. Careful analysis revealed that “that something else” needed to be a non-profit educational organization to publicize and promote safety rules, establish and enforce standards, establish communication between model rocketeers and set up competition and record-setting activities. We needed to do it ourselves. Harry wrote a basic safety code. Adherence to the safety code would be mandatory for all members of the Model Missile Association (MMA). The first meeting of MMA was held on January 3, 1958 in the Hammond Organ Studio on Colorado Boulevard in Denver. About 150 people showed up and 100 became charter members that night. The 18 young men on the MMI Flight Test Crew provided the nucleus of MMA. On February 1, 1958, the first issue of “The Model Rocketeer” newsletter was published and mailed to members.

Harry believed that a model rocket was a logical outgrowth of the model airplane. Harry’s friend, Albert G. Lewis, then editor of Air Trails magazine, which later became American Modeler magazine, gave Harry a platform from which to speak out about model rocketry. Russel G. Nichols, Executive Director of the Academy of Model Aeronautics invited Harry and a crew to the AMA Nationals at Glenview Naval Air Station near Chicago in July of 1958. Harry drove with Melvin O. Johnson, an engineer who had joined MMI, and Norman Mains, a young model rocketeer. Circumstances were such that AMA turned model rocketry down.

The Model Missile Association is grateful for the work of Willaim S. Roe (NAR #13) of Colorado Springs, Colorado. He had a son, John, who had become enthusiastic about

model rocketry. Bill Roe formed the Rocket Advisory Council of the Pikes Peak Region to organize model rocketry activity. He wrote and pushed through the Colorado Springs City Council the world's first permissive model rocketry legislation. This first law was adopted by Colorado Springs on August 12, 1958. Harry and a contingent of model rocketeers came down to Colorado Springs on September 6, 1958 to help Bill Roe officially inaugurate Peak City Rocket Range in Memorial Park. By the way, Bill Roe worked in the printing department of Holly Sugar in Colorado Springs. There just happened to be an extra supply of scrap pink paper and thus the first Safety Rules Book was printed on pink paper and the Model Rocketry Rule Book has been the "Pink Book" ever since.

There was confusion between MMI and the MMA. MMA was officially changed to the National Association of Rocketry (NAR) on October 25, 1958. The first NAR section was the Mile High Section in Denver, soon to be followed by Peak City Section in Colorado Springs.

In October 1958, NAR Headquarters moved into the Stine basement at 6180 Fairfield Drive, Littleton, Colorado. Barbara Stine took over as the active Secretary-Treasurer, and served in that capacity for 7 years until September 1964. We used an Addressograph Model I plate cutter and addressing machine and a mimeograph machine. We put out The Model Rocketeer on a regular monthly basis.

There followed many years of frustration with fire marshals, but Harry persevered and always was willing to work with them.

On a hot July day in 1958, a young man walked into the MMI office. "I'm Vernon Estes. I don't know who is making your rocket motors for you, but I can and will make them better and cheaper." Asked about his background, he said he built garages for a living and his father was in the wholesale fireworks business. When Harry asked him how he was going to make model rocket motors for us, he said: "I'll learn how to do it." He studied all the literature on the subject in Harry's library in our basement. With persistence and ingenuity throughout the winter of 1958-1959, Vern Estes designed, built, tested, worked out the bugs and put into production the world's first fully automated model rocket motor manufacturing machine, dubbed "Mabel." It produced a complete model rocket motor every 5 seconds. The first production model rocket motor popped out of "Mabel" on January 20, 1959 and eventually went to the National Air & Space Museum of the Smithsonian Institution.